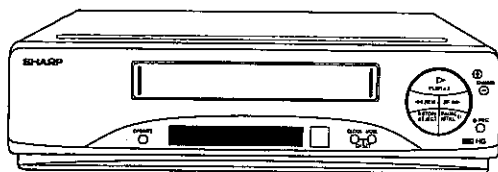


SHARP SERVICE MANUAL

S64U3VC-A462G

**VHS VIDEO CASSETTE RECORDER**

MODELS **VC-A462GM (BK)** **VC-A462SM (BK)**

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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PRECAUTIONS IN PART REPLACEMENT

When servicing the unit with power on, be careful to the section marked white all over.

This is the primary power circuit which is live.

When checking the soldering side in the tape travel mode, make sure first that the tape has been loaded and then turn over the PWB with due care to the primary power circuit.

Make readjustment, if needed after replacement of part, with the mechanism and its PWB in position in the main frame.

(1) Start and end sensors: Q851 and Q852.

Insert the sensor's projection deep into the upper hole of the holder (LHLDZ1893AJ00). Referring to the PWB, fix the sensors tight enough.

(2) Photocoupler RH-FX0005GEZZ: IC901

Refer to the symbol on the PWB and the anode marking of the part.

(3) Cam switches A and B (RH-PX0231GEZZ) : D854 and D855.

Adjust the notch of the part to the white marker of the symbol on the PWB. Do not allow any looseness.

(4) Take-up and supply sensors (RH-PX0232GEZZ): D857 and D856.

Be careful not to confuse the setting direction of the parts in reference to the symbols on the PWB. Do not allow any looseness.

(5) Diode bridge (RH-DX0083GEZZ): D901.

Adjust the + marking of the part to the symbol's cathode marking on the PWB.

1. SPECIFICATIONS

Format:	VHS PAL standard
Video recording system:	Two rotary heads, helical scan system
Video signal:	PAL/SECAM colour and B/G signals, 625 lines
Recording/playing time:	260min max. with SHARP E-260 tape (SP) 520 min max. with SHARP E-260 tape (LP)
Tape width:	12.7 mm
Tape speed:	23.39 mm/s (SP) 11.70 mm/s (LP)
Antenna:	75 ohm unbalanced
Receiving channel:	VHF Channel S1-S41, E2-E12, UHF Channel E21-69
RF converter output signal:	UHF Channel E30-39 (preset to E36 Channel)
Power requirement:	A230V, 50Hz
Power consumption:	Approx. 17W
Operating temperature:	5°C to 40°C
Storage temperature:	- 20°C to 60°C
Weight:	Approx. 3.8kg
Dimensions:	380 mm (W) × 284.5 mm (D) × 93 mm (H)
VIDEO	
Input:	1.0 Vp-p, 75 ohm
Output:	1.0 Vp-p, 75 ohm
S/N ratio:	45 dB (SP)
Horizontal resolution:	250 lines
AUDIO	
Input:	0 dBs = 0.775 Vrms Line: - 3.8 dB, 47k ohm
Output:	Line: - 3.8 dB, 1k ohm
S/N ratio:	42 dB
Frequency response:	80 Hz~10 kHz
Accessories included:	75 ohm coaxial cable Operation manual Infrared remote control Battery (2pcs.)

As part of our policy of continuous improvement, we reserve the right to alter design and specifications without notice.

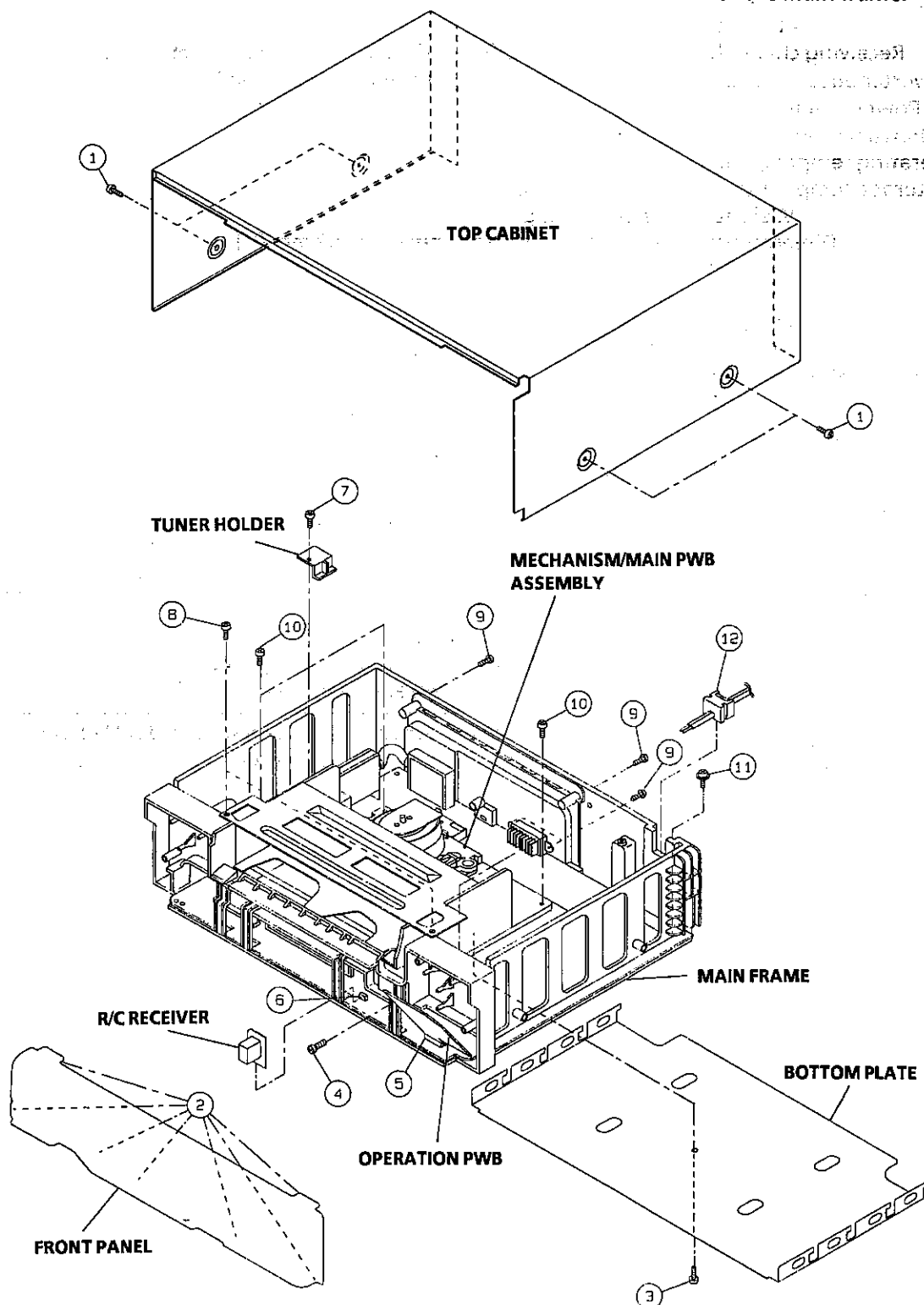
Note: The antenna must correspond to the new standard DIN 45325 (IEC 169 - 2) for combined UHF/VHF antenna with 75 ohm connector.

2. DISASSEMBLY AND REASSEMBLY

2-1 DISASSEMBLY OF MAJOR BLOCKS

TOP CABINET : Remove 4 screws ①.
FRONT PANEL : Remove 7 clips ②.
BOTTOM PLATE : Remove 1 screw ③.
OPERATION PWB : Remove 1 screw ④.
 Tilt the PWB by 45° and take it out of the socket ⑤.

R/C RECEIVER : Take it out of the socket ⑥.
TUNER HOLDER : Remove 1 screw ⑦.
MECHANISM/MAIN PWB ASSEMBLY : Remove 2 screws ⑧, 2 screws ⑨, 4 screws ⑩, 1 screw ⑪ and 1 grommet ⑫. Lift the rear end of the mechanism/main PWB assembly and take it out of the main frame.



2-2 DISASSEMBLING THE MECHANISM/MAIN PWB ASSEMBLY

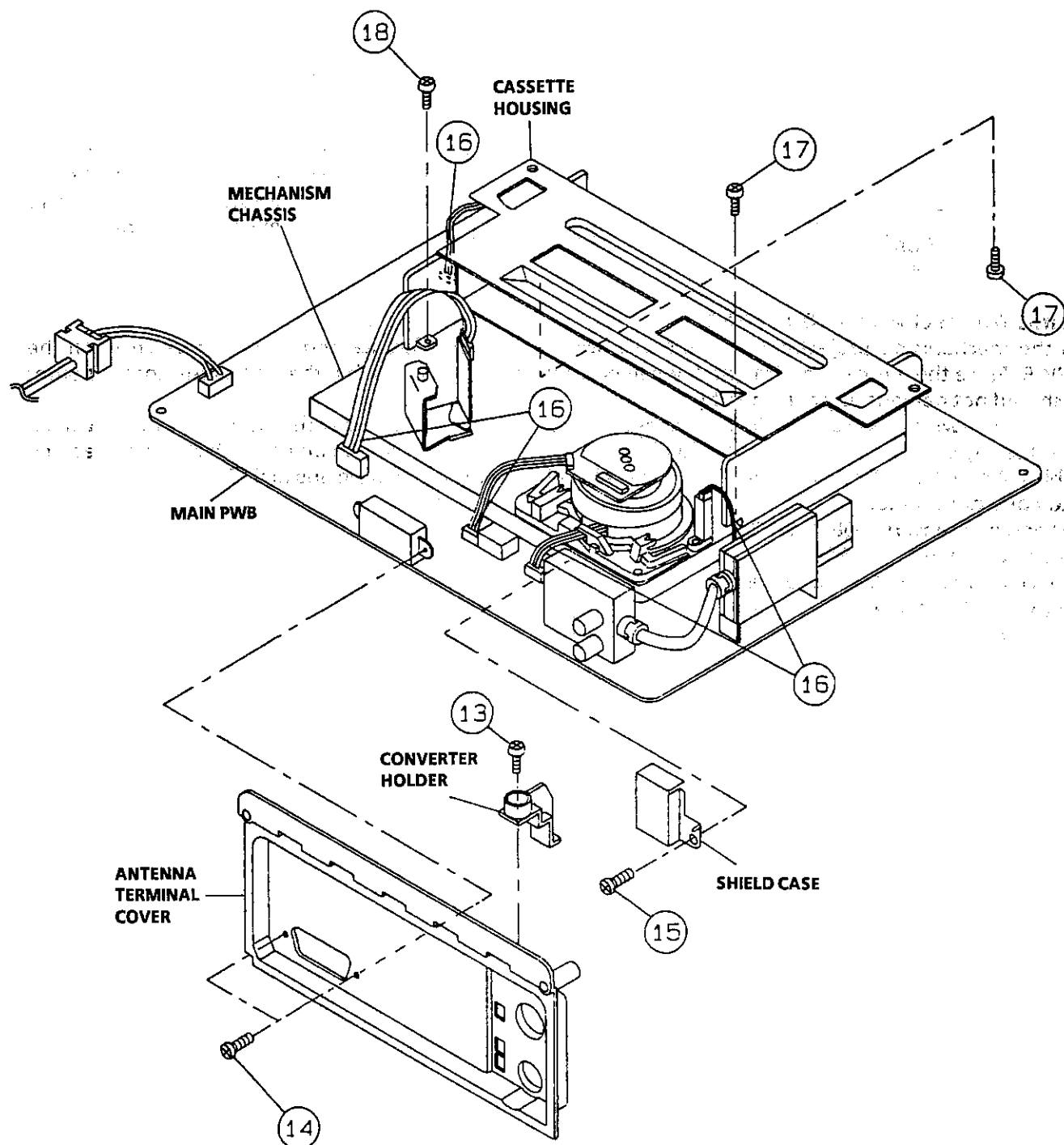
**CONVERTER
HOLDER** : Remove 1 screw ⑬.

**ANTENNA
TERMINAL COVER** : Remove 2 screws ⑭.

**MECHANISM
CHASSIS/
CASSETTE
HOUSING
ASSEMBLY** : Remove 1 screw ⑮ and shield
case.
Remove 3 FFCs and 2 harnesses
⑯.
Be careful not to confuse the
top and bottom of the FFC.

**CASSETTE
HOUSING**

Remove 1 screw ⑰.
Remove the mechanism
assembly straight up from the
main PWB with care not to
damage their surrounding
parts.
: Remove 2 screws ⑱.



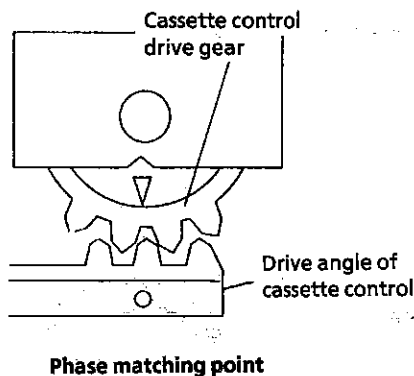
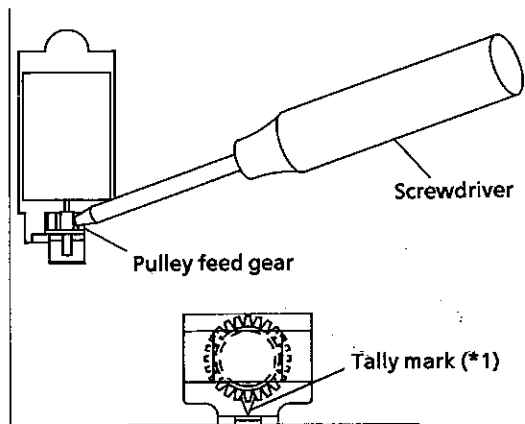
2-3 PRECAUTIONS IN REASSEMBLING

MOUNTING THE CASSETTE CONTROLLER

Initial setting is indispensable before placing the cassette controller in the mechanism. The initial setting is made in two ways; electrical and mechanical.

Electrical setting:

Make a short-circuit between TP5001 (or jumper 241) and TP5002 (or jumper 242), both located at the left on your side on the main PWB, with a 22 ohm resistor and be sure that the mechanism is back to its initial setting position (*1). Now place the cassette controller in position. (This method is used when the mechanism has been already set on its PWB.)



Mechanical setting:

Turn the loading motor's pulley feed gear using a screwdriver and be sure that the mechanism is back to its initial setting position (*1). Now place the cassette controller in position. (This method is applicable for the mechanism alone.)

COUPLING THE MECHANISM TO THE PWB

Match the mechanism's projections with the two symbols (round reference and oval sub-reference) on the main PWB. Place the mechanism straight down in position with due care so that the mechanism chassis's outer edges should not damage any parts nearby.

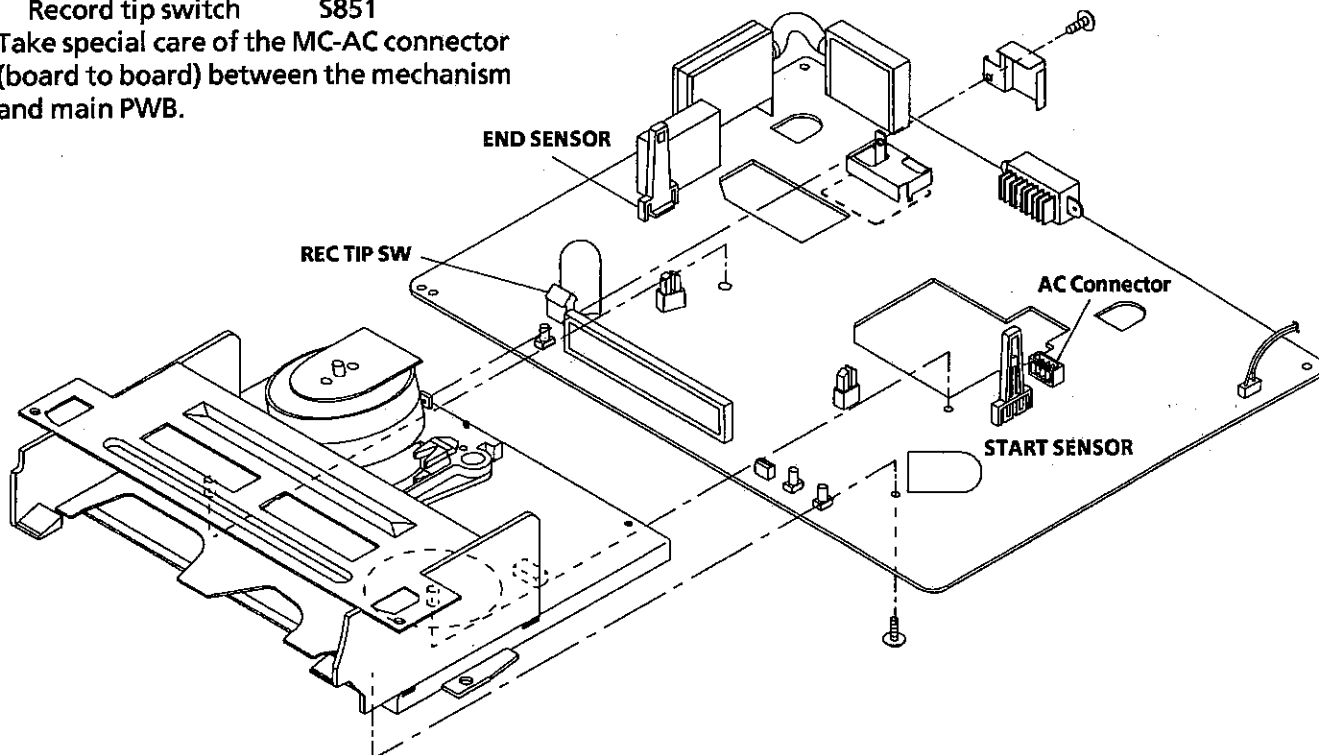
Tighten up the two screws (one for fixing the mechanism and the head amplifier shield, the other on the main PWB's soldering side and located near the loading motor) to fix the mechanism and main PWB. Reconnect the FFC cables (AA, AD and AH) and harnesses (AE and AL) between the mechanism and main PWB.

Parts to pay attention to:

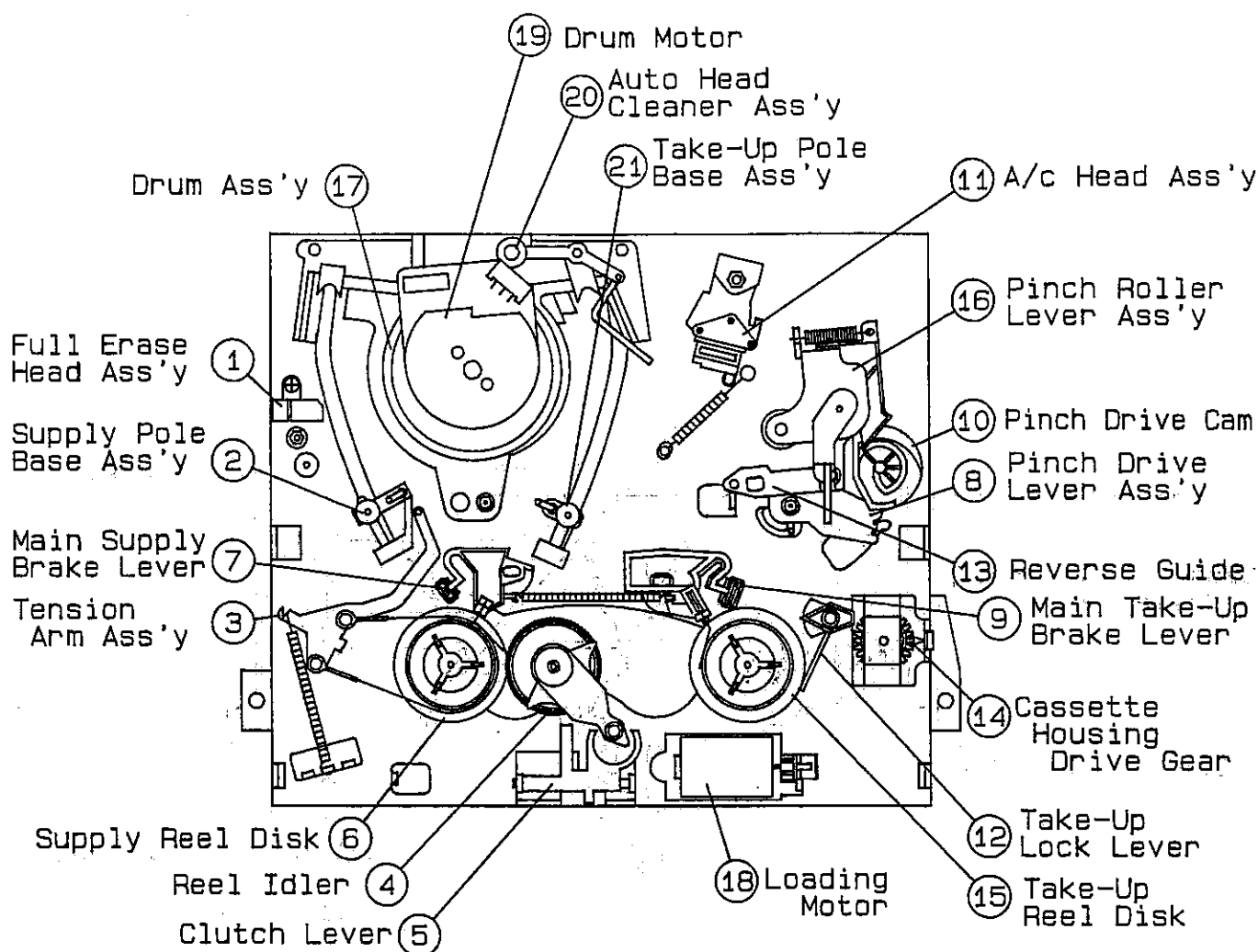
Start and end sensors Q851, Q852

Record tip switch S851

Take special care of the MC-AC connector (board to board) between the mechanism and main PWB.

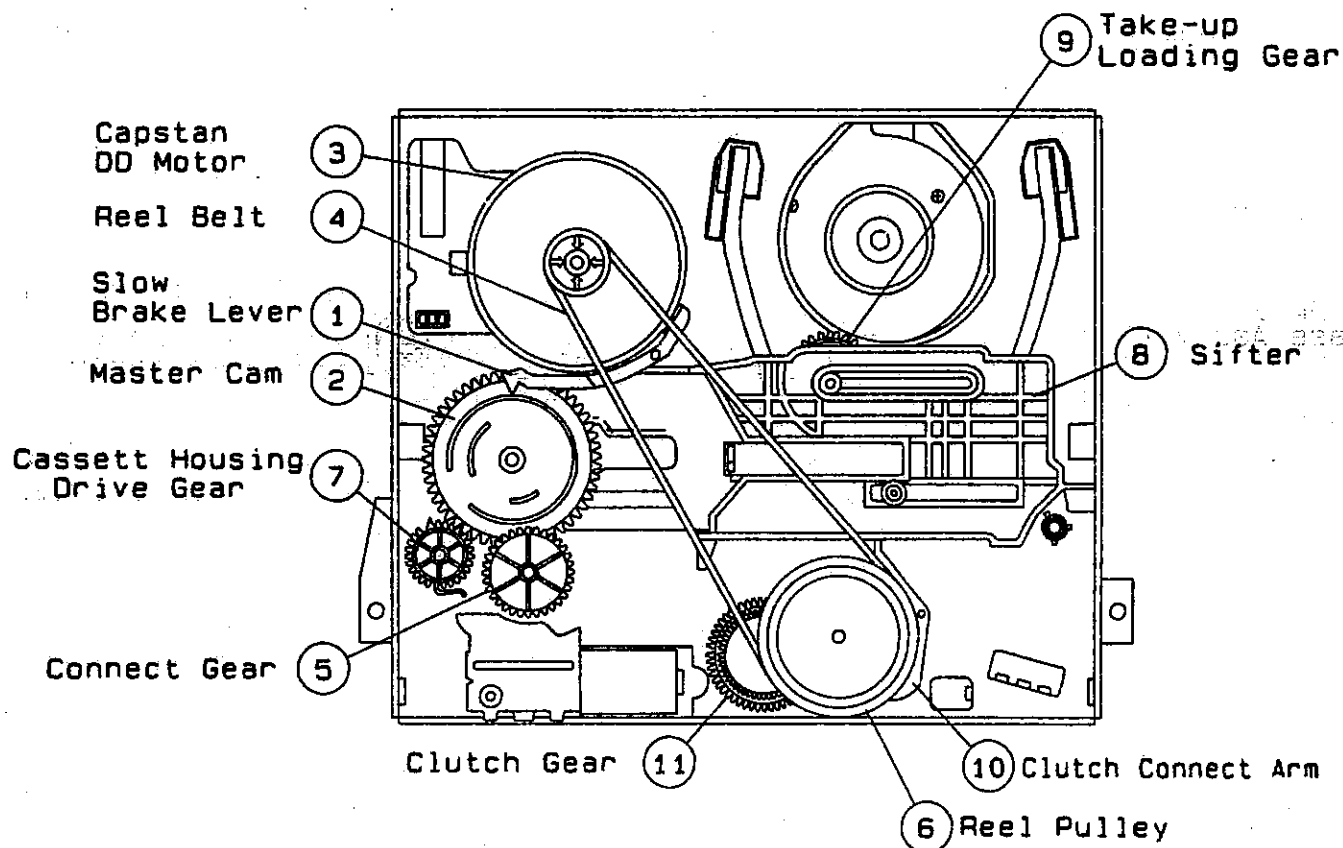


3. FUNCTION OF MAJOR MECHANICAL PARTS (TOP VIEW)



No.	Function	No.	Function
1.	Full erase head ass'y Erase the whole records on the tape in the recording mode.	13.	Reverse guide Pulls out the tape and controls the tape drive train height with the upper and lower guides.
3.	Tension arm ass'y Detects the tension of tape while running, and brakes the supply reel disk via the tension band.	16.	Pinch roller lever ass'y Press-fits the tape to the capstan during tape running. The right protrusion switches the clutch of the cassette housing control assembly in "tape eject", and makes the mechanism eject the tape.
7.	Main supply brake lever Brakes the supply reel disk to prevent tape slackening when the unit is stopped in fast forward or rewind mode.	18.	Loading motor A motive power which drives the mechanism. It transmits the power to the master cam and cassette housing control assembly.
9.	Main take-up brake lever Brakes the take-up reel disk to prevent tape slackening when the unit is stopped in fast forward or rewind mode.		

FUNCTION OF MAJOR MECHANICAL PARTS (BOTTOM VIEW)



No.	Function	No.	Function
1.	Slow brake lever Gets in contact with the capstan D.D. motor linking to the master cam in the slow still mode, and brakes it to a certain degree.	6.	Reel pulley Transmits the power of the capstan D.D. motor to the reel disk via the reel idler.
3.	Capstan D.D. motor A motive power which runs the tape. It transmits the power via the reel belt.	8.	Shifter Transmits the operation of the master cam to break and loading gear.
4.	Reel belt Transmits the power to run the tape to the reel pulley.	9.	Take-up loading gear Shifts the take-up pole base and guide roller via the loading relay gear, and applies the tape around the drum assembly, as well as transmits the power to the supply loading gear.








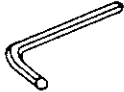

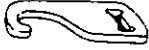
4. ADJUSTMENT, REPLACEMENT AND ASSEMBLY OF MECHANICAL UNITS

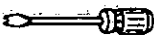

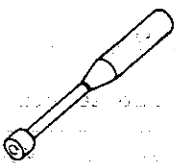

Here we will describe a relatively simple service work in the field, not referring to the more complicated repairs which would require the use of special equipment and tools (drum assembly replacement, for example).

We are sure that the easy-to-handle tools listed below would be more than handy for periodical maintenance to keep the machine in its original working condition.

TOOLS NECESSARY FOR ADJUSTING THE MECHANICAL UNITS

The following tools are required for proper service and satisfactory repair.

No.	Jig Item	Part No.	Code	Configuration	Remarks
1	Reel Disk Height Adjusting Jig	JIGRH0002	BR		These Jigs are used for checking and adjusting the reel disk height.
2	Master Plane Jig	JIGMP0001	BY		
3	A/C Head Tilt Adjusting Jig	JIGACH-A323U	BX		This Jig is used for setting the A/C head tilt.
4	Torque Gauge (90g)	JIGTG0090	CM		These Jigs are used for checking and adjusting the torque of take-up and supply reel disks.
	Torque Gauge (1.2 kg)	JIGTG1200	CN		
5	Gauge Head	JIGTH0006	AW		
6	Cassette Torque Meter	JIGVHT-063	CZ		This cassette torque meter is used for checking and adjusting the torque of take-up for measuring tape back tension.
7	Tension Gauge (300g)	JIGSG0300	BF		There are two gauges used for the tension measurements, 300 g and 2.0 kg.
	Tension Gauge (2.0kg)	JIGSG2000	BS		
8	Hex Wrench (0.9mm)	JIGHW0009	AE		These Jigs are used for loosening or tightening special hexagon type screws.
	Hex Wrench (1.2mm)	JIGHW0012	AE		
	Hex Wrench (1.5mm)	JIGHW0015	AE		
9	Alignment Tape (PAL)	VR0CPSV	CK		This tape is especially used for electrical fine adjustment.
11	Tension Gauge Adapter	JIGADP003	BK		This Jig is used with the tension gauge. Rotary transformer clearance adjusting jig.

No.	Jig Item	Part No.	Code	Configuration	Remarks
12	Special Bladed Screwdriver	JIGDRIVERH-4	AP		This screwdriver is used for adjusting the guide roller height.
14	Torque Driver	JIGTD1200	CB		This is used to screw down resin-made parts: the specified torque is 5 kg.
14	Box Driver	JIGDRIVER110-7	AS		This Jig is used for height adjustment of the A/C head and X-position.
		JIGDRIVER110-4	AV		This Jig is used for replacement of the SI roller.
17	Reverse Guide Height Adjusting Jig	JIGRVGH-F18	BU		This Jig is used for height adjustment of the reverse guide.

MECHANICAL PARTS REQUIRING PERIODICAL INSPECTION

Use the following table as a guide to maintain the mechanical parts in good operating condition.

Parts	Maintained	500 hrs.	1000 hrs.	1500 hrs.	2000 hrs.	Possible symptom encountered	Remarks
Guide roller ass'y		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	Lateral noises Head occasionally blocked	Abnormal rotation or significant vibration requires replacement.
Supply impedance roller		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>		Clean with pure high quality isopropyl alcohol.
Supply impedance roller (inner hole and shaft)			<input type="checkbox"/>		<input type="checkbox"/>		Clean tape contact part with the specified cleaning liquid.
Supply impedance roller flange		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Retaining guide		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Slant pole		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>		
Video head (upper drum ass'y)		<input type="checkbox"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="radio"/>	Poor S/N ratio, no colour	Clean tape contact area with the specified cleaning liquid.
Full-erase head		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	Poor colour, beating	
A/C head		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	Sound too small or distorted	
Lower drum ass'y		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	Poor flatness of the envelope with alignment tape	
Capstan D.D. Motor		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	No tape running, uneven colour	
Pinch roller		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	No tape running, tape slack	Clean rubber and rubber contact area with the specified cleaning liquid.
Reel belt			<input type="checkbox"/>		<input type="radio"/>	No tape running, tape slack, no fast forward/rewind motion	
Tension band ass'y					<input type="radio"/>	Cassette not loaded or unloaded	
Loading Motor					<input type="radio"/>		
Reel idler ass'y					<input type="radio"/>	No tape running	
Reel pully ass'y			<input type="checkbox"/> <input type="triangle"/>		<input type="checkbox"/> <input type="radio"/>		
Clutch gear ass'y					<input type="radio"/>		
Main supply/take-up brake levers					<input type="radio"/>	Tape slack	
AHC (Automatic Head Cleaner)			<input type="radio"/>		<input type="radio"/>		Replace the roller of the cleaner when it wears down. Just change the AHC roller assembly for new one.

NOTE: ☐: Part replacement.
☐: Cleaning (For cleaning, use a lint-free cloth dampened with pure isopropyl alcohol).
: Oil refilling (The indicated point should be lubricated with high quality spindle oil every 1000 hrs).

If the reading is out of the specified value, clean or replace the part.

REMOVAL AND REASSEMBLY OF CASSETTE HOUSING CONTROL ASSEMBLY

● Removal

1. Set the cassette ejected condition in the cassette eject mode.
2. Unplug the recorder from the main source.
3. Follow the procedures below in the specified order.
 - a) Remove the cassette housing installation screws ① and ②.
 - b) Slide and pull out the cassette housing control assembly upward.

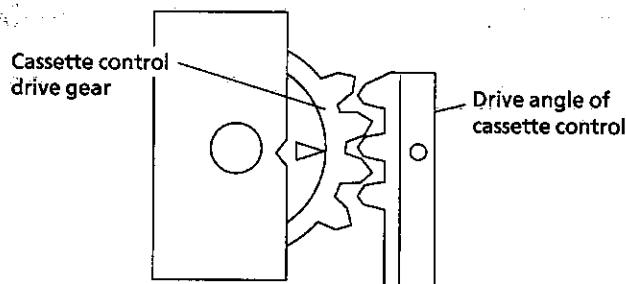


Figure 4-2.

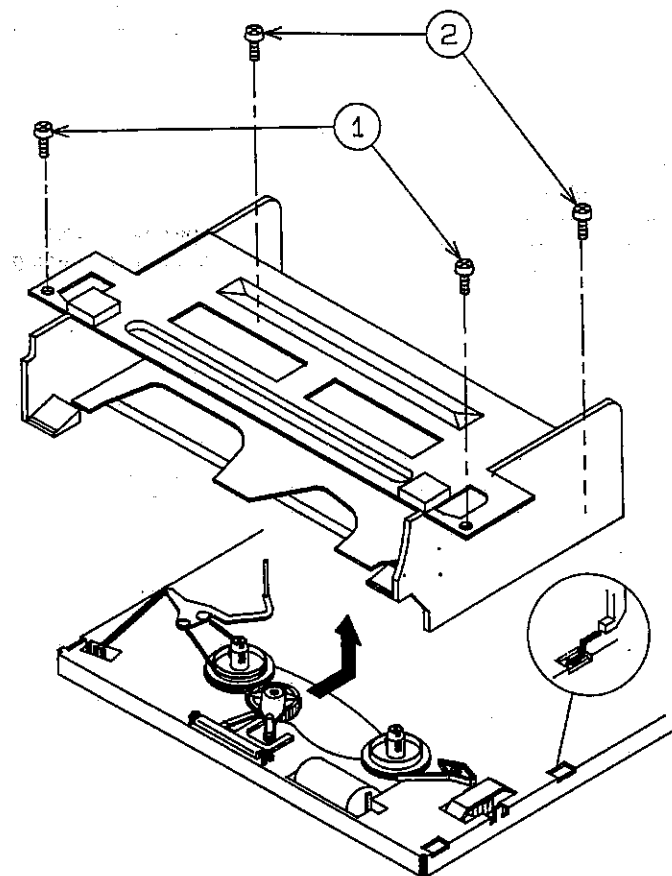


Figure 4-1.

● Reassembly

1. Before installation of the cassette housing control assembly, make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Plug in the power cord. The cassette control drive gear starts and stops just when a tally mark appears in the mechanism chassis window. Align this tally mark with the cassette control drive angle's mark, as shown in Fig. 4-2, to position the cassette control on the mechanism chassis.

2. Follow the procedures for removal in the reverse order.

Notes:

- ① In using a magnet screw driver, be sure to keep it away from the A/C head, FE (Full Erase) head, or the drum.
- ② In removal and reassembly, take care not to hit the cassette housing control assembly or tools against the guide pin, drum, or the like thereabout.
- ③ Load the cassette once onto the cassette housing control assembly after reassembly.

TO RUN A TAPE WITHOUT THE CASSETTE HOUSING CONTROL ASSEMBLY

1. Be sure to make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor, before turning on the power.
2. Plug in the power cord.
3. Turn on the power switch.
4. Open the lid of a cassette tape by hand.
5. Hold the lid with two pieces of vinyl tape.
6. Set the cassette tape in the mechanism chassis.
7. Stabilize the cassette tape with a weight (500g) to prevent floating.
8. Perform running test.

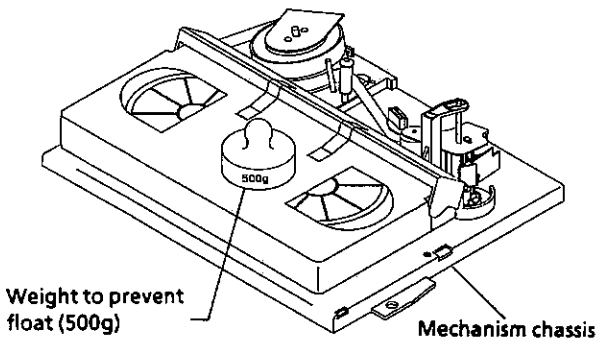


Figure 4-3.

Note:

The weight should not be more than 500g.

REPLACEMENT AND HEIGHT CHECKING AND ADJUSTMENT OF REEL DISKS

● Removal (Supply and Take-up reel disks)

1. Remove the cassette housing control assembly.
2. Pull the tension band out of the tension arm.
3. Remove the supply main brake and the take-up main brake.
4. Open the hook at the top of the reel disk, and remove the reel disk.

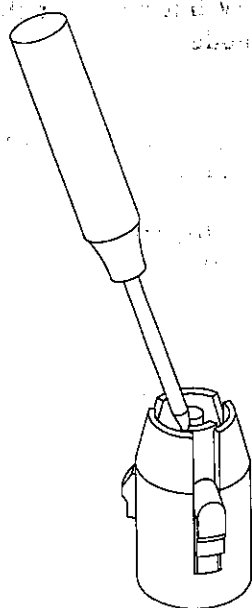
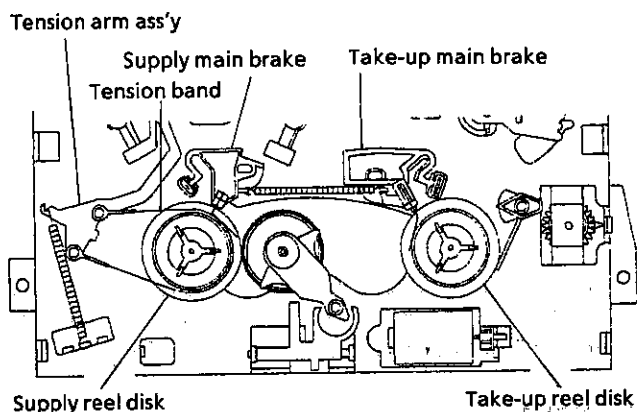


Figure 4-4.

Note:

When the tension band is pressed in the direction of the arrow for removal, the catch is hard to be deformed.



Figure 4-5.

● Reassembly (Supply reel disk)

1. Clean the reel disk shaft and apply oil to it.
2. Install a new supply reel disk onto the shaft.
3. Replace the tension band around the supply reel disk, and insert it to the hole of the tension arm.
4. Check the reel disk height and reassemble the supply main brake.

Notes:

- ① Take enough care not to deform the tension band during installation of the supply reel disk.
- ② Be careful not to damage the supply main brake.

● Reassembly (Take-up reel disk)

1. Clean the reel disk shaft and apply oil to it.
2. Install a new take-up reel disk onto the shaft.
3. Check the reel disk height and reassemble the take-up main brake.

Note:

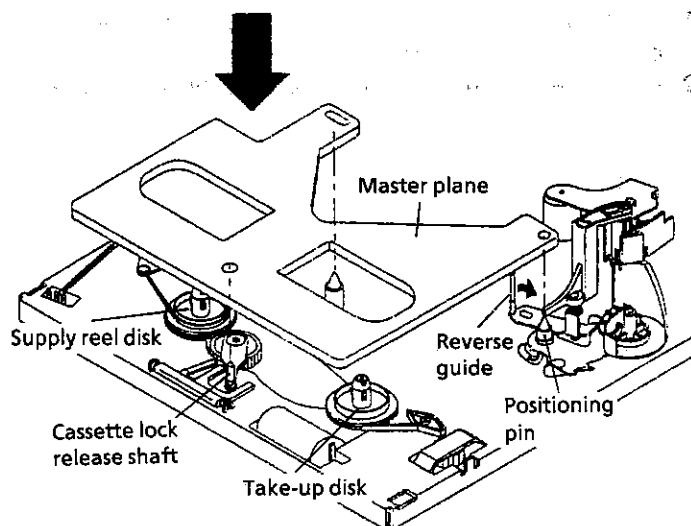
Take care not to damage the take-up main brake.

- * After reassembly, check the video search rewind back tension (see page 16), and check the brake torque (see page 19).

● Height checking and adjustment

Note:

Place the master plane onto the mechanism unit, taking care not to hit the drum (see Figure 4-6).



Set the master plane releasing the reverse guide by a finger.

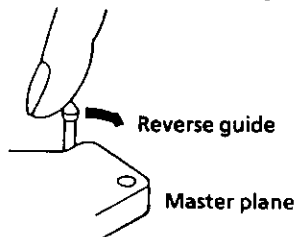


Figure 4-6.

- Check that the reel disk is lower than part A but higher than part B. If the height is not correct, readjust the reel disk height by changing the poly-slider washer under the reel disk.

Note:

Whenever replacing the reel disk, perform the height checking and adjustment.

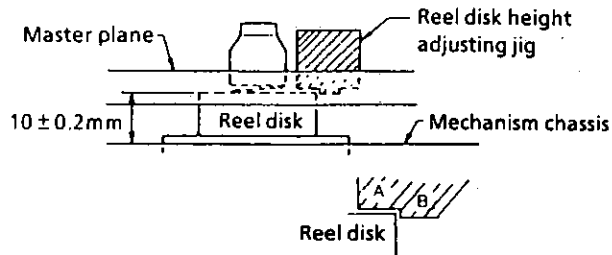


Figure 4-7.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN FAST FORWARD MODE

- Remove the cassette housing control assembly.
- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
- Setting
 1. Set a torque gauge to zero on the scale. Place it on the take-up reel disk.
 2. Press the FF button to set the mechanism to the fast forward mode.
- Checking
 1. Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the take-up direction.
 2. Check to see if the take-up torque is higher than 69 mN·m (700 gf·cm).

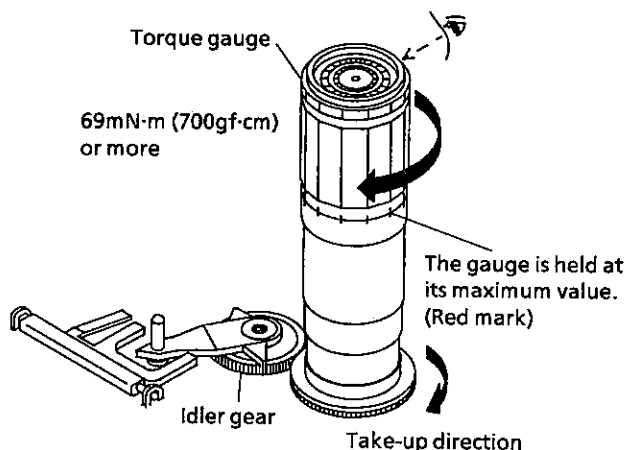


Figure 4-8.

● Adjustment

1. If the take-up torque is outside the range, clean the capstan D.D. motor pulley, reel belt and reel pulley with cleaning liquid, then recheck the torque.
2. If the take-up torque is still out of range, replace the reel belt.

Notes:

1. Hold down the torque gauge so that it may not fly off.
2. When checking the take-up torque, do not keep the reel disk locked for a longer time.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN REWIND MODE

- Remove the cassette housing control assembly.
- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
- Setting
 1. Set a torque gauge to zero on the scale. Place it on the supply reel disk.
 2. Press the REW button to set the mechanism to the rewind mode.
- Checking
 1. Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the take-up direction.
 2. Check to see if the take-up torque is higher than 69 mN·m (700 gf·cm).

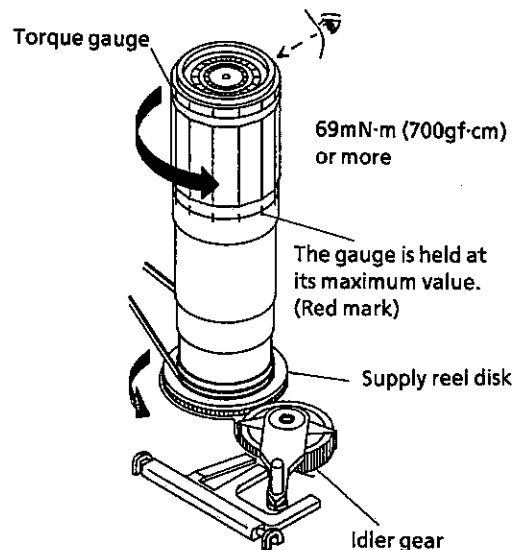


Figure 4-9.

● Adjustment

1. If the take-up torque is outside the range, clean the capstan D.D. motor pulley, reel belt and reel pulley with cleaning liquid, then recheck the torque.
2. If the take-up torque is still out of range, replace the reel belt.

Notes:

1. Hold down the torque gauge so that it may not fly off.
2. When checking the take-up torque, do not keep the reel disk locked for a longer time.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN PLAYBACK MODE

1. Remove the cassette housing control assembly.
2. Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
3. Open the lid of the cassette torque meter, and hold it with two pieces of vinyl tapes.
4. Load the cassette torque meter into the unit.
5. Put the weight (500g) on the cassette torque meter.
6. Press the REC button to put the unit in REC mode.

Set value SP $8.8 \pm 3.8 \text{ mN}\cdot\text{m}$ ($90 \pm 39 \text{ gf}\cdot\text{cm}$)

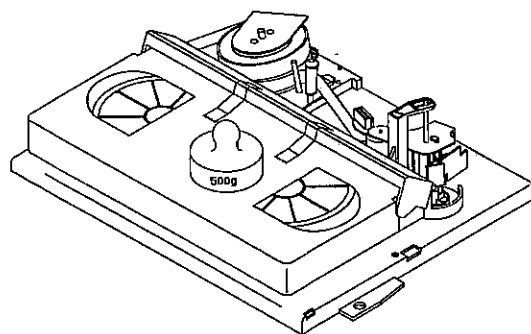


Figure 4-10.

● Checking

1. Check that the torque is in the range of $8.8 \pm 3.8 \text{ mN}\cdot\text{m}$ ($90 \pm 39 \text{ gf}\cdot\text{cm}$).
2. The torque fluctuates due to the rotational deviation of the reel pulley ass'y. Use the center of the fluctuation as the value.
3. Place the ass'y in the SP record mode, and check that the take-up torque is within the range.

● Adjustment

If the take-up torque in the playback mode is outside the range, replace the reel pulley ass'y.

Note:

Stabilize the cassette torque meter to prevent floating.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN VIDEO SEARCH REWIND MODE

- Remove the cassette housing control assembly.

- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.

● Setting

1. Push the PLAY button to place the ass'y in the playback mode.
2. Push the REW button to place the ass'y in the video search rewind mode.

● Checking

1. Place the torque gauge on the supply reel disk, and turn it counterclockwise very slowly (one rotation every 1 to 2 seconds) and check that the torque is within the set value $14.5 \pm \begin{smallmatrix} 8 \\ 6 \end{smallmatrix} \text{ mN}\cdot\text{m}$ ($148 \pm \begin{smallmatrix} 80 \\ 60 \end{smallmatrix} \text{ gf}\cdot\text{cm}$)

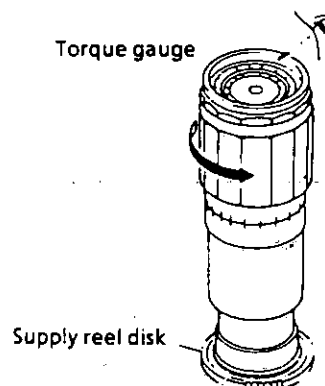


Figure 4-11.

Note:

Set the torque gauge securely on the supply reel disk. If it is not secure, the measurement will be incorrect.

● Adjustment

If the take-up torque in video search rewind mode is outside the range, replace the reel pulley ass'y.

Note:

The torque fluctuates due to the rotational deviation of the reel pulley ass'y. Use the center of the fluctuation at the value.

CHECKING THE FAST FORWARD BACK TENSION

- Remove the cassette housing control assembly.
- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
- Checking
 1. Push the FF button to place the ass'y in the fast forward mode.
 2. Place the torque gauge on the supply reel disk, and turn it clockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is $1.5 \pm 0.9 \text{ mN}\cdot\text{m}$ ($15 \pm 9 \text{ gf}\cdot\text{cm}$).

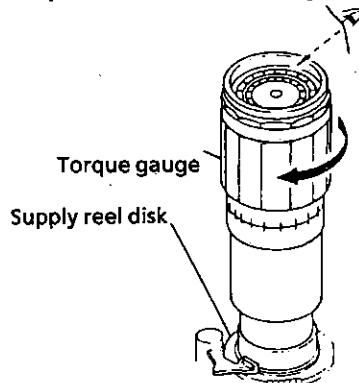


Figure 4-12.

Note:

- ① Set the torque gauge securely on the supply reel disk. If the torque gauge is not securely set on the reel disk, measurement will be incorrect.
- ② Measure the torque with the torque gauge's weight exerted on the reel disk.

CHECKING THE REWIND BACK TENSION

- Remove the cassette housing control assembly.
- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
- Checking
 1. Push the REW button to place the ass'y in the rewind mode.
 2. Place the torque gauge on the take-up reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is $1.3 \pm 0.8 \text{ mN}\cdot\text{m}$ ($13 \pm 8 \text{ gf}\cdot\text{cm}$).

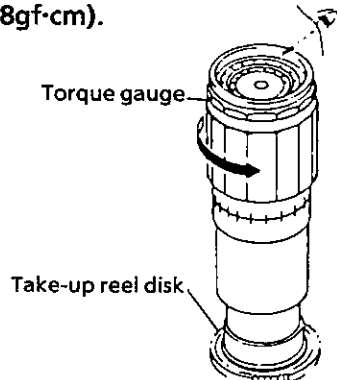


Figure 4-13.

Note:

- ① Set the torque gauge securely on the take-up reel disk. If it is not secure, the measurement will be incorrect.
- ② Measure the torque with the torque gauge's weight exerted on the reel disk.

CHECKING THE VIDEO SEARCH REWIND BACK TENSION

- Remove the cassette housing control assembly.
- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
- Checking
 1. Push the PLAY button to place the ass'y in the playback mode.
 2. Push the rewind button to place the ass'y in the video search rewind mode.
 3. Place the torque gauge on the take-up reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within the set value $4 \pm 1.7 \text{ mN}\cdot\text{m}$ ($41 \pm 17 \text{ gf}\cdot\text{cm}$).

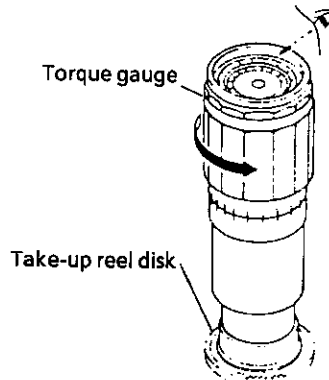


Figure 4-14.

Note:

- ① Set the torque gauge securely on the take-up reel disk. If it is not secure, the measurement will be incorrect.
- ② Measure the torque with the torque gauge's weight not exerted on the reel disk.

CHECKING THE PINCH ROLLER PRESSURE

- Remove the cassette housing control assembly.
- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
- Checking
 1. Push the PLAY button to place the ass'y in the playback mode.

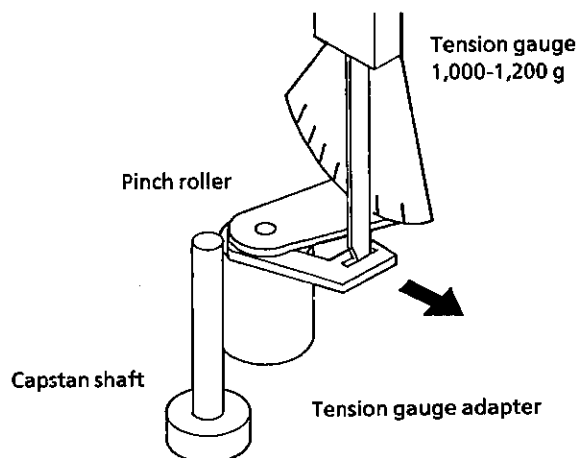


Figure 4-15.

1. Detach the pinch roller from the capstan shaft.
2. Set the tension gauge by hooking the tension gauge adapter onto the pinch roller shaft.
3. Gradually release the pressure to allow the pinch roller to touch the capstan shaft. When the pinch roller just touches the capstan shaft, read the indication on the gauge.
4. Check that the reading of the tension gauge is in the range of 900 to 1200 g.

CHECKING AND ADJUSTMENT OF TENSION POLE POSITION

- Remove the cassette housing control assembly.
- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.

● Setting

1. Open the lid of cassette tape (E-180), and hold it with two pieces of vinyl tapes.
2. Load the cassette tape into the unit.
3. Put the weight (500g) on the cassette tape.

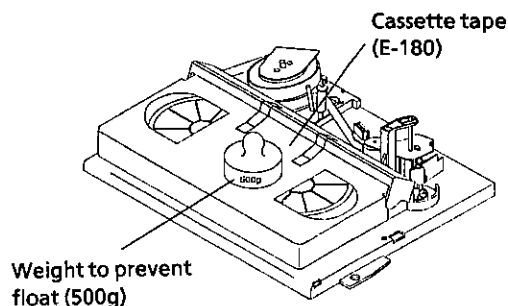


Figure 4-16.

● Checking

1. Set a cassette tape, press the REC button and get the tape loaded. Now check the tension pole position.

2. Visually check to see if the left end of the tension pole is in alignment with the line 0.2 mm left of the center line of the SI roller. Readjust as required in the following steps.

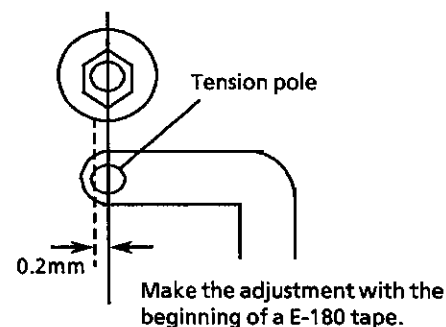


Figure 4-17.

- ① If the end is at the left from the dotted line:

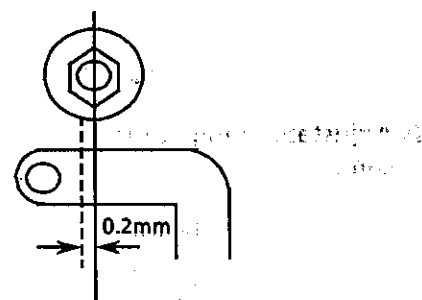


Figure 4-18.

1. Remove the cassette and press the REC button to make an empty loading. Put a bladed screwdriver into the tension band positioning cam and turn it clockwise.
2. Place the cassette in position and check the tension pole position.

- ② If the end is at the right from the dotted line:

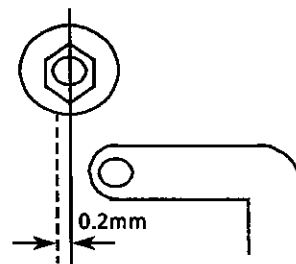


Figure 4-19.

1. Remove the cassette and press the REC button to make an empty loading. Put a bladed screwdriver into the tension band positioning cam to turn it counterclockwise.
2. Place the cassette in position and check the tension pole position.

Note: The tension band positioning cam cannot be adjusted with a cassette in place because the cam will be located below the cassette. Repeat a series of steps; empty loading, adjustment, cassette placement and position checking.

- ① The tension band positioning cam cannot be adjusted with a cassette in place because the cam will be located below the cassette. Repeat a series of steps; empty loading, adjustment, cassette placement and position checking.
- ② Turn the positioning cam clockwise to move the tension pole to the right (in the black-arrow direction). Turn it counterclockwise to move the tension pole to the left (in the white-arrow direction).

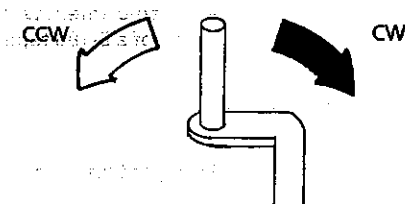


Figure 4-20.

- ③ Adjustable range of the tension pole positioning cam.

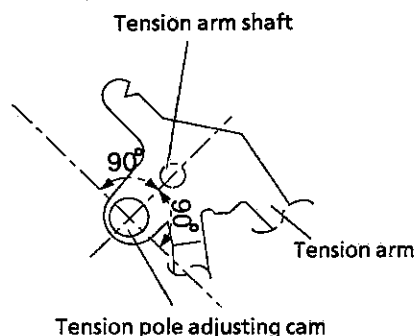


Figure 4-21.

Adjust the tension pole positioning cam so that the arrow mark on the cam be within 90° left and right from the tension arm shaft's center.

CHECKING AND ADJUSTMENT OF RECORD / PLAYBACK BACK TENSION

- Remove the cassette housing control assembly.
- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
- **Setting**
 1. Open the lid of the cassette torque meter, and hold it with two pieces of vinyl tapes.
 2. Load the cassette torque meter into the unit.
 3. Put the weight (500g) on the cassette torque meter.

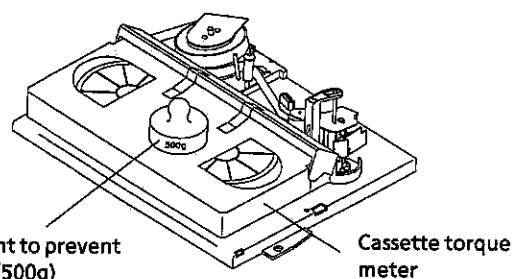


Figure 4-22.

● Checking

1. Push the REC button to place the unit in the record mode.
2. Check that the back tension indicated by the gauge is within the set range 31 to 38 g·cm.

Notes:

1. Make sure that the video cassette tape is over the retaining guide.
2. Make sure that the tape is not slack nor damaged at either end.

● Adjustment

1. If the reading of the cassette torque meter is less than specified, move the tension spring hook toward A.
2. If the reading of the cassette torque meter is more than specified, move the tension spring hook toward B.

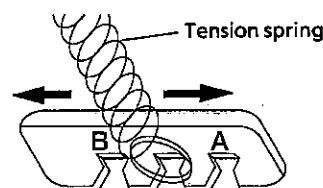
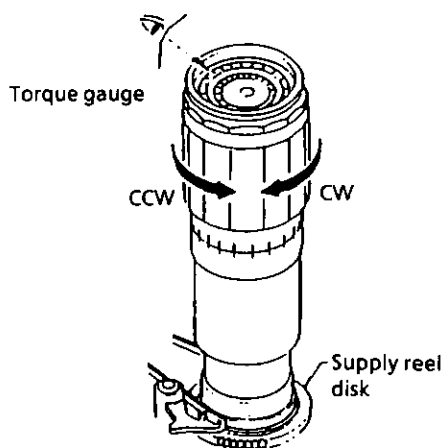


Figure 4-23.

CHECKING THE BRAKE TORQUE

- Checking the brake torque at the supply side

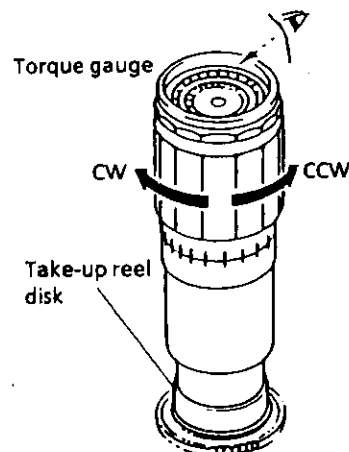


CCW: $10 \pm 4 \text{ mN}\cdot\text{m}$ ($102 \pm 41 \text{ gf}\cdot\text{cm}$)
CW: $35 \pm 20 \text{ mN}\cdot\text{m}$ ($357 \pm 204 \text{ gf}\cdot\text{cm}$)

Figure 4-24.

- Remove the cassette housing control assembly.
- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
- Setting
 1. Set a torque gauge to zero on the scale. Place it on the supply reel disk.
 2. Switch from the FF mode to the STOP mode.
 3. Disconnect the AC power plug.
- Checking
 1. Slowly rotate the torque gauge in the clockwise (CW) direction and counterclockwise (CCW) direction of the supply brake so that the reel disk and the indicator of the torque gauge rotate at an equal rate. Check that the values are within the range of CW direction = $35 \pm 20 \text{ mN}\cdot\text{m}$ ($357 \pm 204 \text{ gf}\cdot\text{cm}$), CCW direction = $10 \pm 4 \text{ mN}\cdot\text{m}$ ($102 \pm 41 \text{ gf}\cdot\text{cm}$), and that the brake torque in the CW direction is at least twice as high as that in the CCW direction.

- Checking the brake torque at the take-up side



CCW: $35 \pm 20 \text{ mN}\cdot\text{m}$ ($357 \pm 204 \text{ gf}\cdot\text{cm}$)
CW: $10 \pm 4 \text{ mN}\cdot\text{m}$ ($102 \pm 41 \text{ gf}\cdot\text{cm}$)

Figure 4-25.

- Remove the cassette housing control assembly.
- Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
- Setting
 1. Set a torque gauge to zero on the scale. Place it on the take-up reel disk.
 2. Switch from the FF mode to the STOP mode.
 3. Disconnect the AC power plug.
- Checking
 1. Slowly rotate the torque gauge in the clockwise (CW) direction and counterclockwise (CCW) direction of the take-up brake so that the reel disk and the indicator of the torque gauge rotate at an equal rate. Check that the values are within the range of CCW direction = $35 \pm 20 \text{ mN}\cdot\text{m}$ ($357 \pm 204 \text{ gf}\cdot\text{cm}$), CW direction = $10 \pm 4 \text{ mN}\cdot\text{m}$ ($102 \pm 41 \text{ gf}\cdot\text{cm}$), and that the brake torque in the CCW direction is at least twice as high as that in the CW direction.
- Adjustment of the brake torque at the supply side and the take-up side
 1. If the supply or take-up brake torque is outside the range, clean the supply or take-up reel disk break lever pad, then recheck the torque.
 2. If the supply or take-up brake torque is still outside the range, replace the main brake ass'y or the main brake spring.

Note:

When the main brake is replaced, perform the height checking and adjustment of reel disks (see page 13), and the brake torque checking.

REPLACEMENT OF A/C (Audio/Control) HEAD

1. Remove the cassette housing control assembly.
2. Place the unit in the unloading mode, and unplug the power cord.

● Removal

1. Loosen the tilt adjusting screw ①.
2. Remove the azimuth adjusting screw ②.
3. Remove the A/C head screw ③.
4. Unsolder the A/C head PWB soldered to the A/C head assembly.

Notes:

1. After replacement, be sure to perform the adjustment of the tape drive train (see page 22). Under any circumstances, avoid touching the head. Clean the head, if touched with your finger, with alcohol.
2. Take care that the azimuth spring does not fly off when removing the A/C head screw.

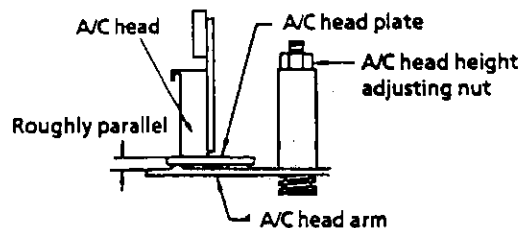


Figure 4-28.

● Adjustment

[A/C head tilt angle]

1. Set the mechanism to the loading mode.
2. Place the A/C head tilt adjusting Jig ①.
3. Slowly turn the tilt adjusting screw ② with a screw driver until there is no gap between the Jig and the A/C head.

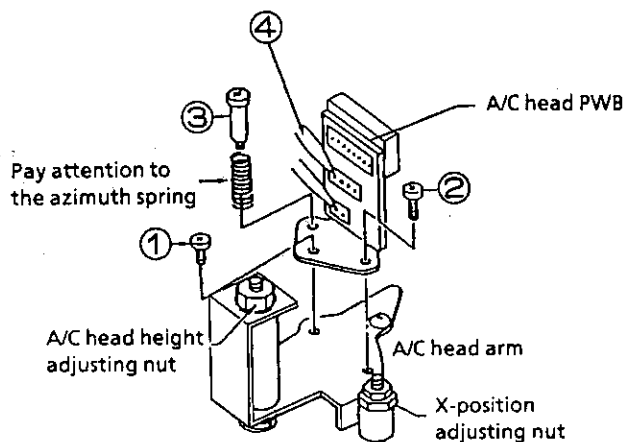
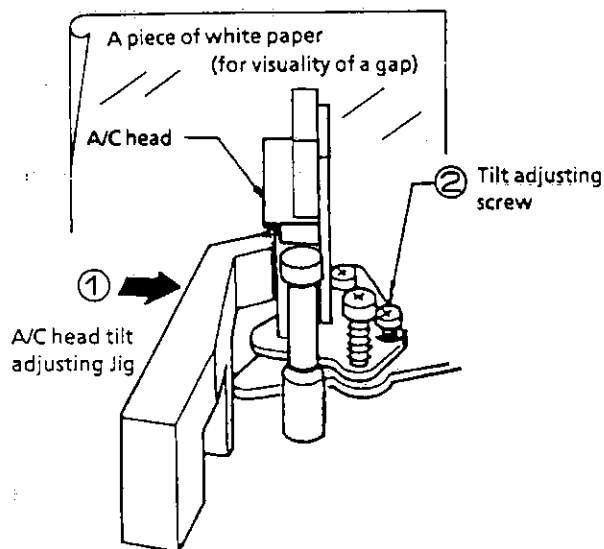


Figure 4-26.



(a)

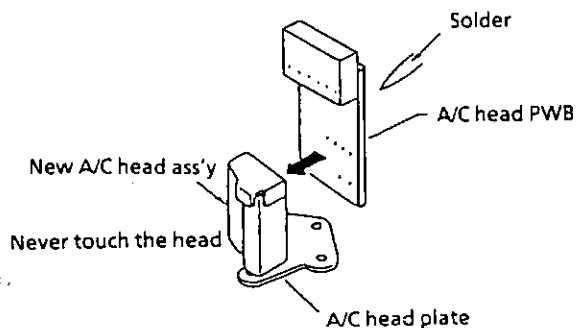
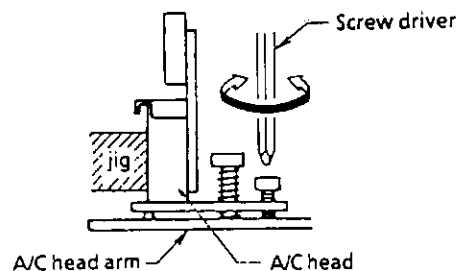
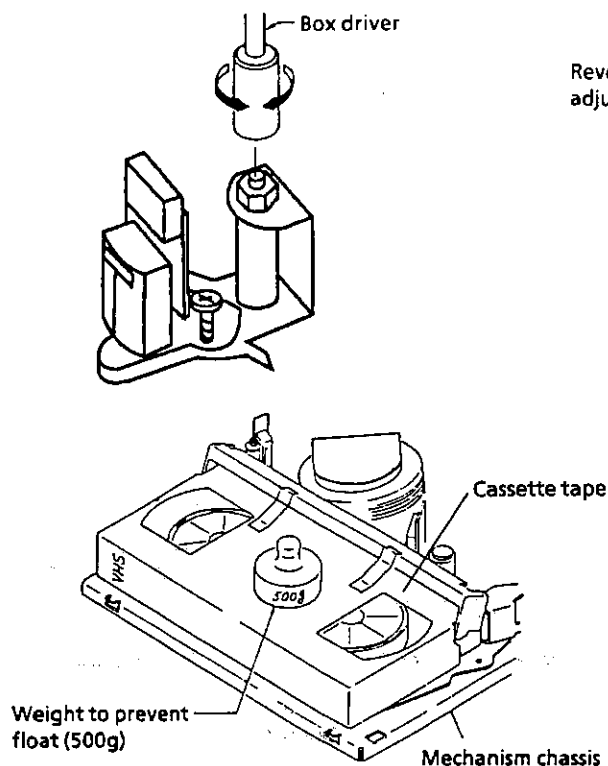


Figure 4-27.

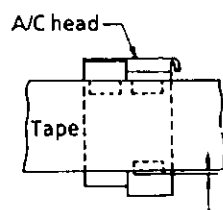


(b)

Figure 4-29.

[A/C head height rough adjustment]● **Setting**

- ① Roughly adjust the height of the A/C head by turning the A/C head adjusting hexagon nut with the specialized box driver until the tape is in the position shown below.
- ② Set the cassette tape to the mechanism chassis.
- ③ Press the PLAY button to put the unit in the playback mode.

● **Adjustment**

Adjust the nut visually so that the control head is visible 0.3 to 0.5mm below the bottom of the tape.

Figure 4-30.

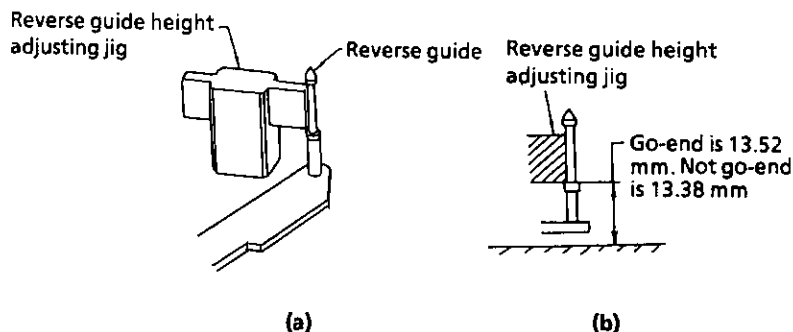
HEIGHT ADJUSTMENT OF REVERSE GUIDE**[Height adjustment of reverse guide]**

Figure 4-31.

1. In the tape load mode, make adjustment at the 13.38mm side first and then rotate the height adjusting nut by 1/6 turn counterclockwise.
2. Actually load the unit with a tape, put it in the play mode, and make sure the tape is free from wrinkles near the reverse guide.
3. Use a commercially available box driver to turn the height adjusting nut.

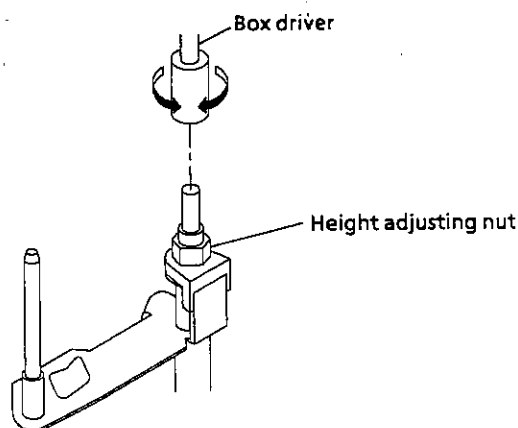


Figure 4-32.

ADJUSTMENT OF TAPE DRIVE TRAIN

1. Remove the cassette housing control assembly.
2. Make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor. Now turn on the power.
3. Check and adjust the position of the tension pole. (See page 17.)
4. Check and adjust the video search rewind back tension. (See page 16.)
5. Set the tilt angle of the A/C head. (See page 20.)
6. Rough adjustment of tape drive train.
 - a) Connect the oscilloscope to the test point for PB CHROMA envelope output (TP2201). Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP2202).
 - b) Loosen the setscrew at the lower part of the guide roller, and adjust it with an adjusting screw driver (JIGDRIVERH-4) so that the guide roller turns smoothly. (Do not overloosen the setscrew, which causes insecurity of the guide roller.) (See Figure 4-33.)
 - c) Set the alignment tape (monoscope pattern) on the reel disk, and place the unit in the playback mode. (Place a 500 g weight on the cassette tape to prevent floating of the cassette tape.)

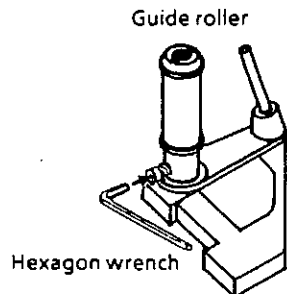


Figure 4-33.

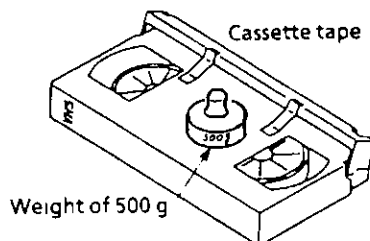


Figure 4-34.

- d) In the X value adjustment mode (see the Electrical Adjustment), change the envelope waveform from MAX to MIN, and MIN to MAX by pushing the (+) or (-) tracking button, and check a flat response is obtained on the waveform.
- e) If a flat response cannot be obtained, roughly adjust the guide rollers on the supply side and take-up side using an adjusting screw driver until a flat response can be obtained.
- f) Turn the A/C head tilt adjusting screw with a screwdriver to prevent the tape from wrinkling at the upper and lower flanges of the fixed guide.
 - 1) Wrinkles at the upper flange : Turn the above adjusting screw clockwise, as shown in Figure 4-35 (a).
 - 2) Wrinkles at the lower flange : Turn the above adjusting screw counterclockwise, as shown in Figure 4-35 (b).

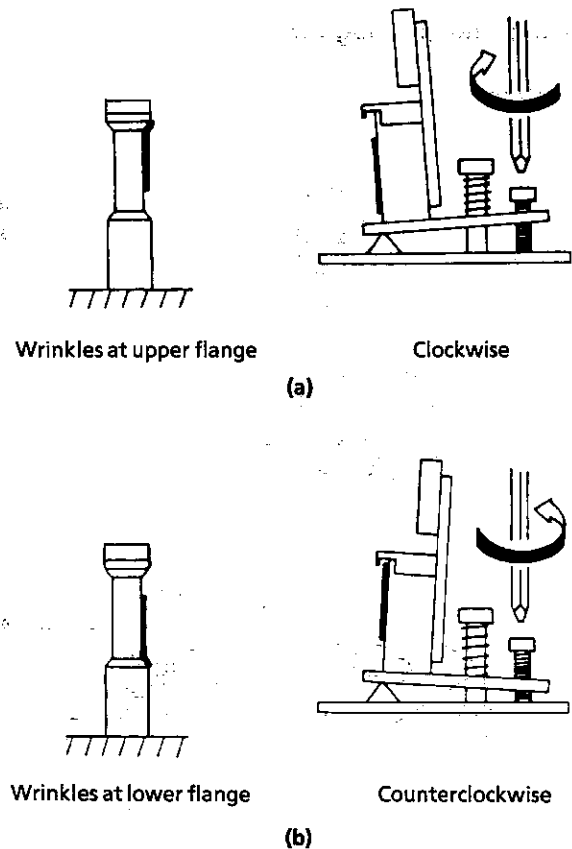


Figure 4-35.

Notes:

1. Place the tracking control in the center position, and adjust the X-position adjusting nut so that the PB CHROMA envelop becomes maximum for easier rough adjustment of the tape drive train.
2. In the rough adjustment, pay particular attention to the outlet side.

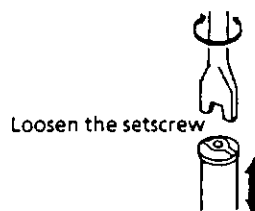


Figure 4-36.

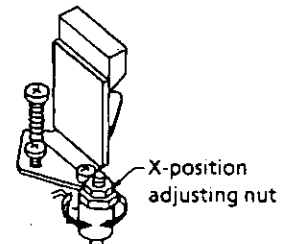
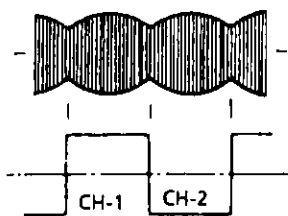


Figure 4-37.

PB CHROMA envelope (TP2201)



Head switching pulse (TP2202)

Figure 4-38.

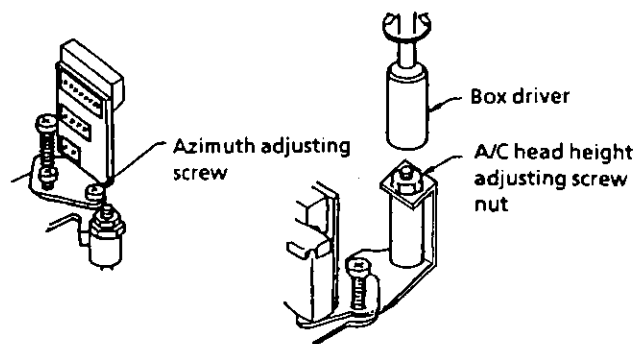


Figure 4-39.

Figure 4-40.

7. Adjustment of A/C head height and azimuth

- Connect an oscilloscope to the audio output terminal.
- Use the alignment tape and play back its audio 6 kHz signal (monoscope pattern for video signal). Adjust the azimuth adjusting screw to obtain the maximum audio output on an oscilloscope. (See Figure 4-39.)
- Use the alignment tape and play back its audio 1 kHz signal (colour bar for video signal) and slowly rotate the A/C head height adjusting nut with the special box driver to obtain the maximum audio output.
- Perform the adjustment in b) again.
- After this adjustment, apply glyptal to the screws and nuts to fix them.

8. Adjustment of tape drive train and X-Position.

- Connect the oscilloscope to the test points (TP2201) for PB CHROMA envelope output. Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP2202).
- Play back the tape drive train alignment tape.
- Push the (+) or (-) button to change the envelope waveform from MAX to MIN, and MIN to MAX. Adjust the guide roller's height on the supply and take-up sides with an adjusting screw driver, to obtain an envelop waveform that is as flat as possible.
- If the tape is above or below the helical lead, the PB CHROMA waveform will take the shape shown in Figure 4-41.
- Adjust for maximum flatness of the envelope as the step 6, e) in page 22.

	When the tape is above the helical lead.		When the tape is below the helical lead.	
	Supply side	Take-up side	Supply side	Take-up side
Adjustment	Supply side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Take-up side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Supply side guide roller rotated in counterclockwise direction (raises guide roller) to make the tape float above the helical lead. The supply side guide roller is then rotated in the clockwise direction to flatten the envelope.	Take-up side guide roller rotated in counterclockwise direction (raises guide roller) to make the tape float above the helical lead. The take-up side guide roller is then rotated in the clockwise direction to flatten the envelope.

Figure 4-41.

- f) Push the (+) or (-) tracking button to check that a flat response is obtained on the envelope waveform.
 - g) Secure the guide roller by tightening the guide roller setscrew in the unloading mode.
 - h) Play back the tape drive train alignment tape to check that the envelope waveform does not change.
9. Adjustment of A/C head X-position.
- a) In the X value adjustment mode (see the Electrical Adjustment), make a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor, to center the tracking.
 - b) Rotate the X-position adjusting nut with an adjusting box driver, and adjust the A/C head position for maximum head switching pulse low side envelope.
 - c) Adjust the playback switching point.
 - d) Check the flatness of the envelope waveform and sound by playing back a recorded tape.

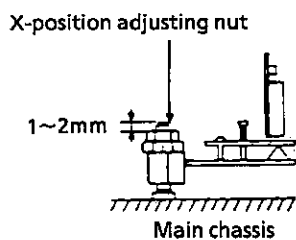


Figure 4-42.

REPLACEMENT OF THE CAPSTAN D.D. (DIRECT DRIVE) MOTOR

- Remove the cassette housing control assembly.
 - Removal (Follow the order of indicated numbers.)
1. Disconnect from the board-to-board connector on the main PWB.
 2. Remove the reel belt ①.
 3. Remove the screws ②.

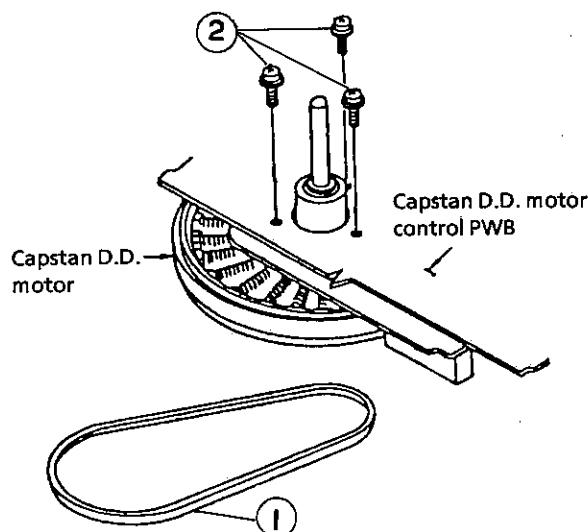


Figure 4-43.

● Reassembly

1. Mount the capstan motor on the mechanism chassis making sure not to allow the capstan shaft to hit the mechanism chassis, and attach it with the three screws.
2. Attach the reel belt. Reconnect to the board-to-board connector on the main PWB.

Notes:

1. After installing the capstan D.D. motor, be sure to rotate the capstan D.D. motor and check the movement.
2. Check the servo circuit.

REPLACEMENT OF DRUM D.D. MOTOR

1. Put the unit in the cassette eject position.
2. Unplug the power cord.

● Removal (Reverse the order in reassembly.)

1. Disconnect the FFC cable ①.
2. Unscrew the stator assembly fixing screws ②.
3. Take out the stator assembly ③.
4. Unscrew the rotor assembly fixing screws ④.
5. Take out the rotor assembly ⑤.

Notes:

1. In removing the stator assembly, part of the drum earth spring pops out of the pre-load collar. Be careful not to lose it.
2. Secure the rotor assembly so that the installation positioning holes in the rotor assembly and upper drum assembly match. (Match the upper drum's notch with the rotor's hole.)
3. Be careful not to damage the upper drum or the video head.
4. Be sure that the hall device and the stator assembly are not damaged by the rotor assembly or other parts.
5. After installation, adjust the playback switching point.

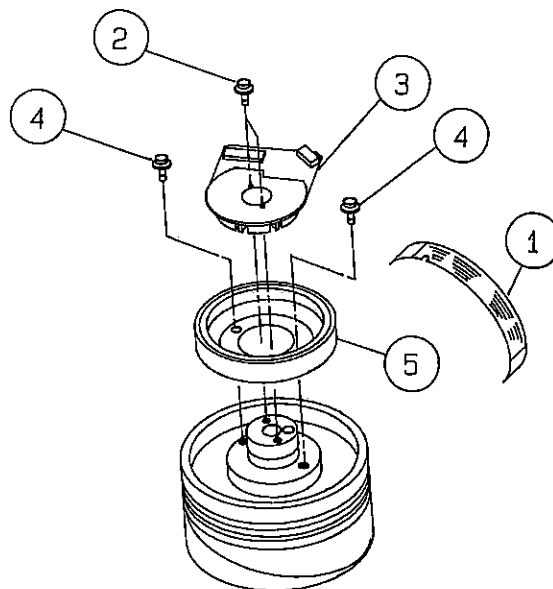


Figure 4-44.

REPLACEMENT OF UPPER DRUM

(2-head/4-head drum models are applicable here. Hi-Fi models are equipped with an upper-and-lower drum assembly.)

Note:

The gap between the lower drum and the upper drum is very accurate, in the order of microns, and care should be paid to their replacement. Even a slight amount of foreign material will affect the accuracy of their reassembly.

● **Replacement (Follow the order of the indicated numbers.)**

- ① Remove the drum earth brush and its spring ①.
- ② Put a mark for the direction of the pre-load collar and the drum shaft ②.
- ③ Loosen the set screws (M4) ③ of the pre-load collar. Take out the pre-load collar upward.
- ④ Pull up the upper drum ④ out of position.

Note:

1. Remove the drum motor, referring to the drum motor replacement.
2. Put a mark, with a marking pen or the like, in order to identify the direction of the pre-load collar and the drum shaft. Now remove the pre-load collar.
3. Be careful not to lose the drum earth brush and drum earth brush spring. Handle the brush with care not to allow any dust and foreign matters on it.
4. Avoid touching the drum surface with bare hands.
5. Pull out the upper drum with care so that it may not be tilted.
6. Do not hit the screws when tightening them.

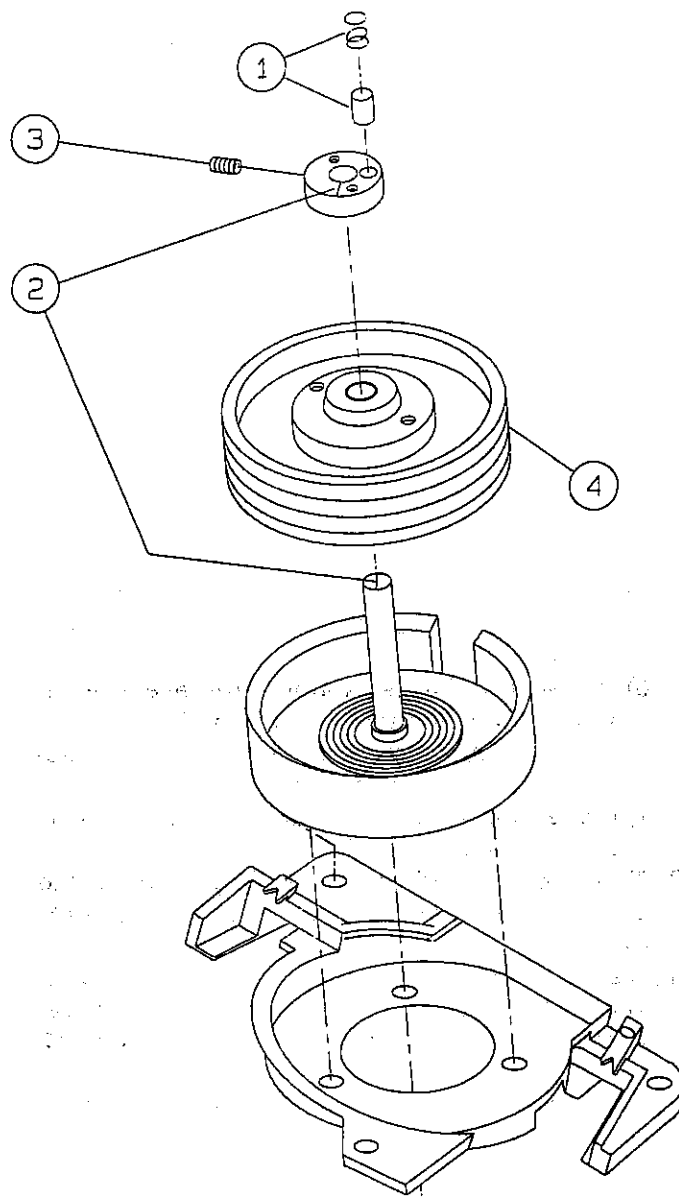


Figure 4-45.

- **Drum replacement (for 2/4 drums; drum assembly supplied for Hi-Fi models)**

1. Clean up the drum shaft.
2. Make a clearance at the rotary transformer. This is an important procedure to maintain the performance.
 - 1) Some rotary transformer clearance shims are packaged in the servicing upper drum assembly or lower drum assembly. Install the thinnest (0.06 mm) of the shims onto the lower drum shaft. (Refer to Fig. 4-46(a) for thickness.)
 - 2) Install the upper drum assembly onto the drum shaft.
 - 3) Install the pre-load collar.
 - 4) Exert a force of 14.7 N (1.5 kgf) on the pre-load collar from above (using a commercially available load meter). Tighten up the set screws (M4) of the pre-load collar.
 - 5) Turn the upper drum by hand and listen to see if the rotary transformer gives no rubbing sound.
 - 6) If the transformer sounds, replace the installed shim with the next thicker shim. Take the above steps 1) thru 5) until no rubbing sound is heard any longer.
 - 7) Make sure no rubbing sound is heard. Finally add the 0.03 mm thick shim.
3. Place the pre-load collar back in position in the direction marked in disassembling. (See Fig. 4-45. for setting.)
4. Exert a force of 14.7 N (1.5 kgf) upon the pre-load collar from above. Tighten up the set screws of the pre-load collar (1.18 Nm (12 kgf-cm)).
5. Place the drum earth brush, drum earth brush spring and drum motor back in position.
6. After replacement, be sure to check the tape drive train adjustment (See page 22.) and the following electric adjustments.
 - Adjustment of the playback switching point.
 - Checking and adjustment of the X-position.
 - Adjustment of SP slow tracking preset.

- **Precautions in drum replacement**

1. The drum assembly is very delicate. Handle it with enough care.
2. Be certain that the drum surface is free from dust, dirt and any other foreign matters.
3. Carefully adjust the rotary transformer clearance because this adjustment is important in order to maintain the performance.
4. Install the upper drum straight down to the drum shaft. Do not apply any excessive force upon the upper drum.
5. Finally clean up the drum.

REPLACEMENT OF UPPER DRUM
- Springs and rubber parts (Fig. 4-46(b))
After replacement, be sure to check the tape drive train adjustment (See page 22.) and the following electric adjustments.

Adjustment of the playback switching point.
Checking and adjustment of the X-position.
Adjustment of SP slow tracking preset.

After replacement, be sure to check the tape drive train adjustment (See page 22.) and the following electric adjustments.

Adjustment of the playback switching point.
Checking and adjustment of the X-position.
Adjustment of SP slow tracking preset.

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Adjustment of SP slow tracking preset.

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Checking and adjustment of the X-position.
Adjustment of SP slow tracking preset.

Adjustment of the playback switching point.
Checking and adjustment of the X-position.
Adjustment of SP slow tracking preset.

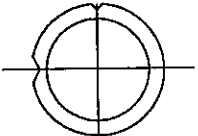
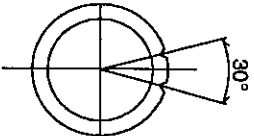
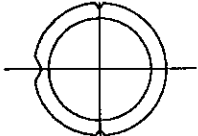
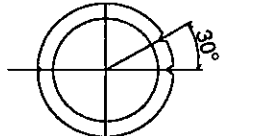
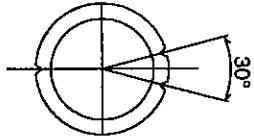
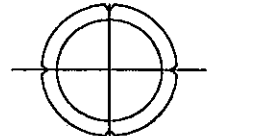
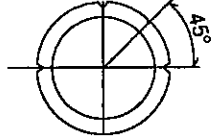
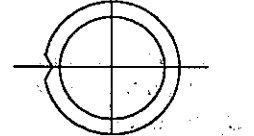
No	Thickness (mm)	Shape	No	Thickness (mm)	Shape
1	$t = 0.060$		5	$t = 0.100$	
2	$t = 0.070$		6	$t = 0.110$	
3	$t = 0.080$		7	$t = 0.120$	
4	$t = 0.090$		8	$t = 0.030$	

Figure 4-46(a).

Shim thickness variations

Pressure collar set-up direction

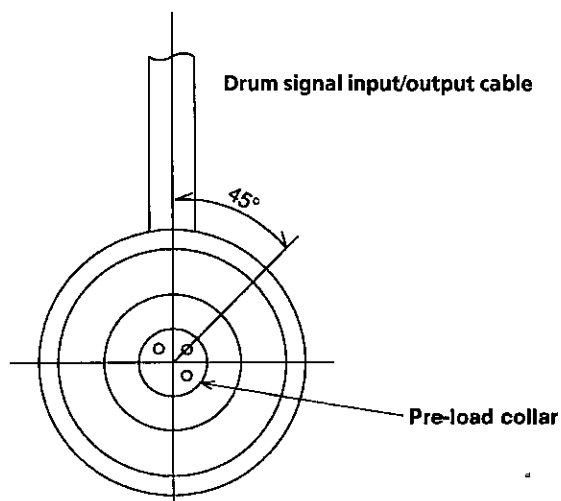


Figure 4-46(b).

ASSEMBLE THE MECHANISM'S PARTS RE- QUIRING THE PHASE MATCHING IN THE STEPS BELOW.

1. Assembling the pinch roller assembly and the pinch drive cam (on the front of the mechanism chassis).
2. Mounting the shifter (on the back of the mechanism chassis).
3. Mounting the master cam (on the back of the mechanism chassis).
4. Mounting the connection gear, slow brake and loading motor assemblies (on the back of the mechanism chassis).

1. Assembling the pinch roller assembly and the pinch drive cam (on the front of the mechanism chassis).

Place the following parts in position in numerical order.

- (1) Pinch drive cam ①
- (2) Pinch roller and pinch double-action lever ②
- (3) Open lever ③

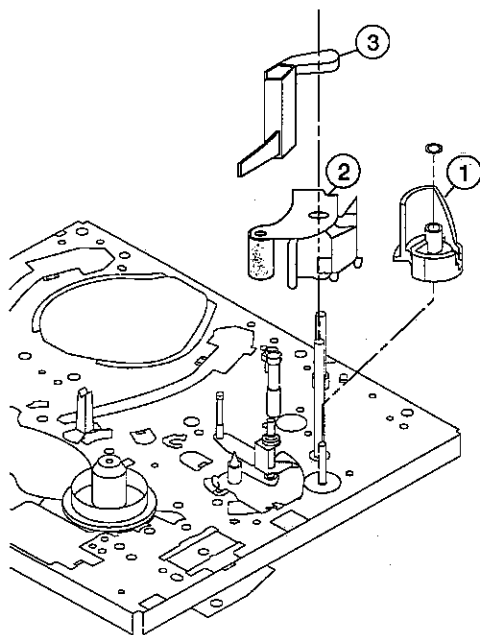


Figure 4-47.

① Insert Pinch Drive Cam.

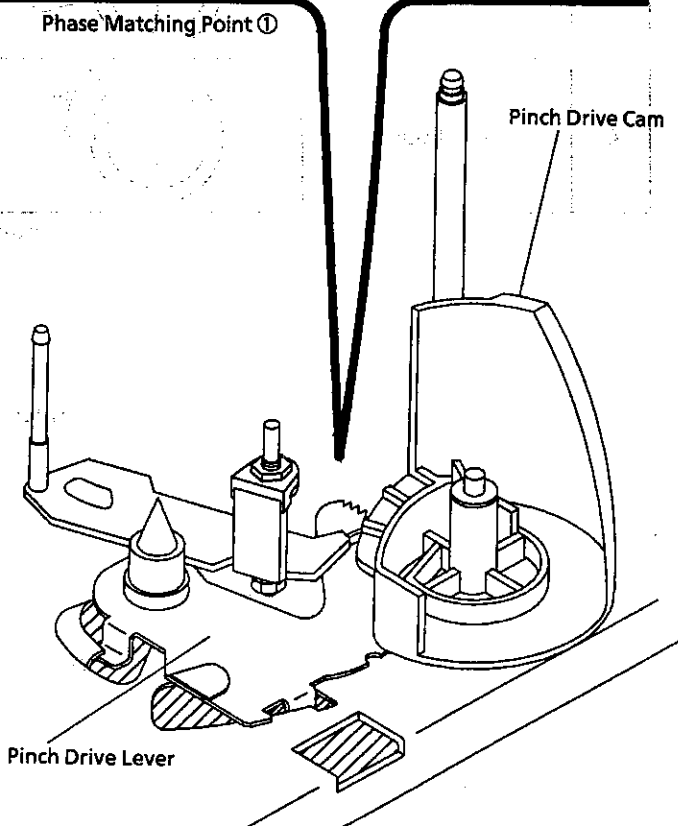
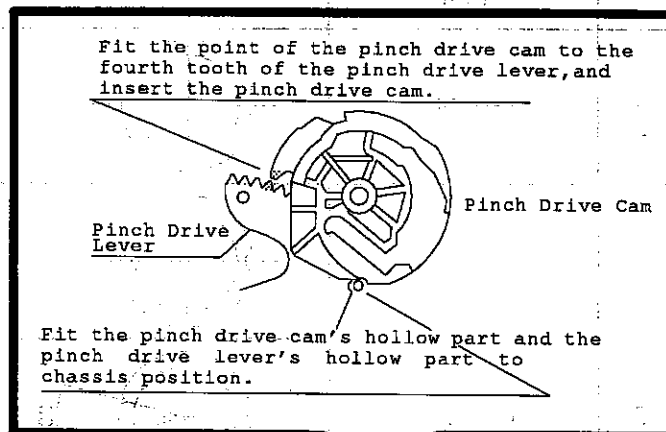


Figure 4-48-1.

② Insert Pinch Roller/Pinch Double Action Lever Ass'y.

Phase Matching Point ②

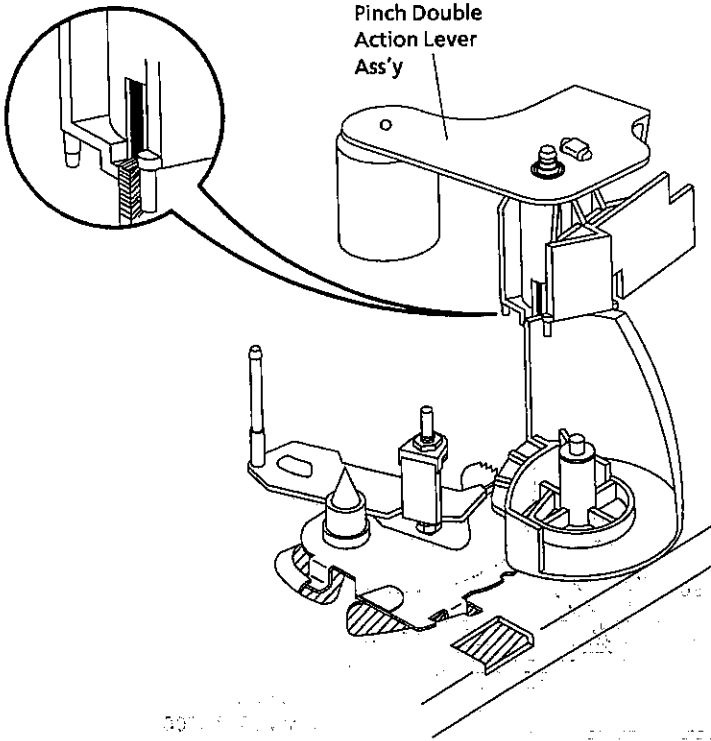


Figure 4-48-2.

③ Insert Open Lever.

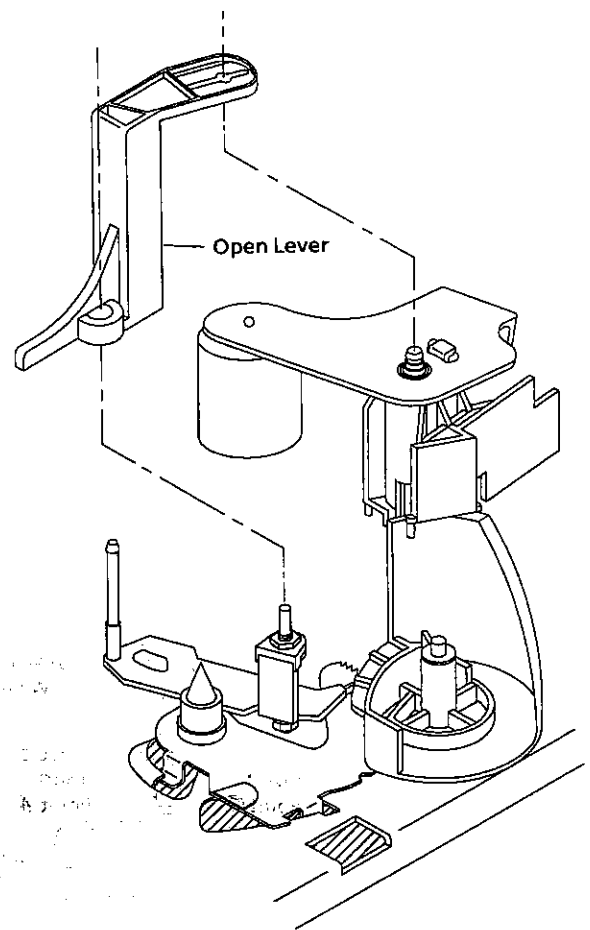
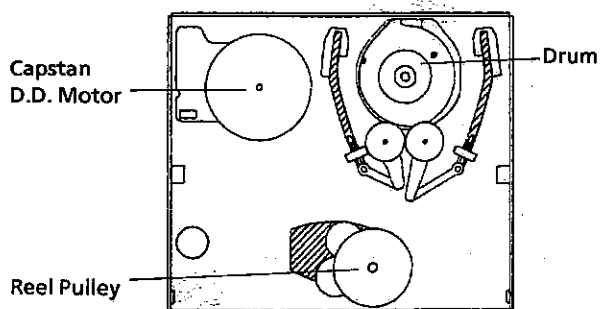


Figure 4-48-3.

2. Mounting the shifter (on the back of the mechanism chassis).

1. Make sure that the loading gear is at the point (1) as shown below.
2. Place the shifter in position, keeping in mind the 7 insertion points and the five relief points.
3. For the phase matching at the insertion point (1), see the point (2) as shown below.
4. Finally fix the shifter with two washers located on insert points ① and ⑥.



(Bottom Side of mechanism chassis)

Figure 4-49.

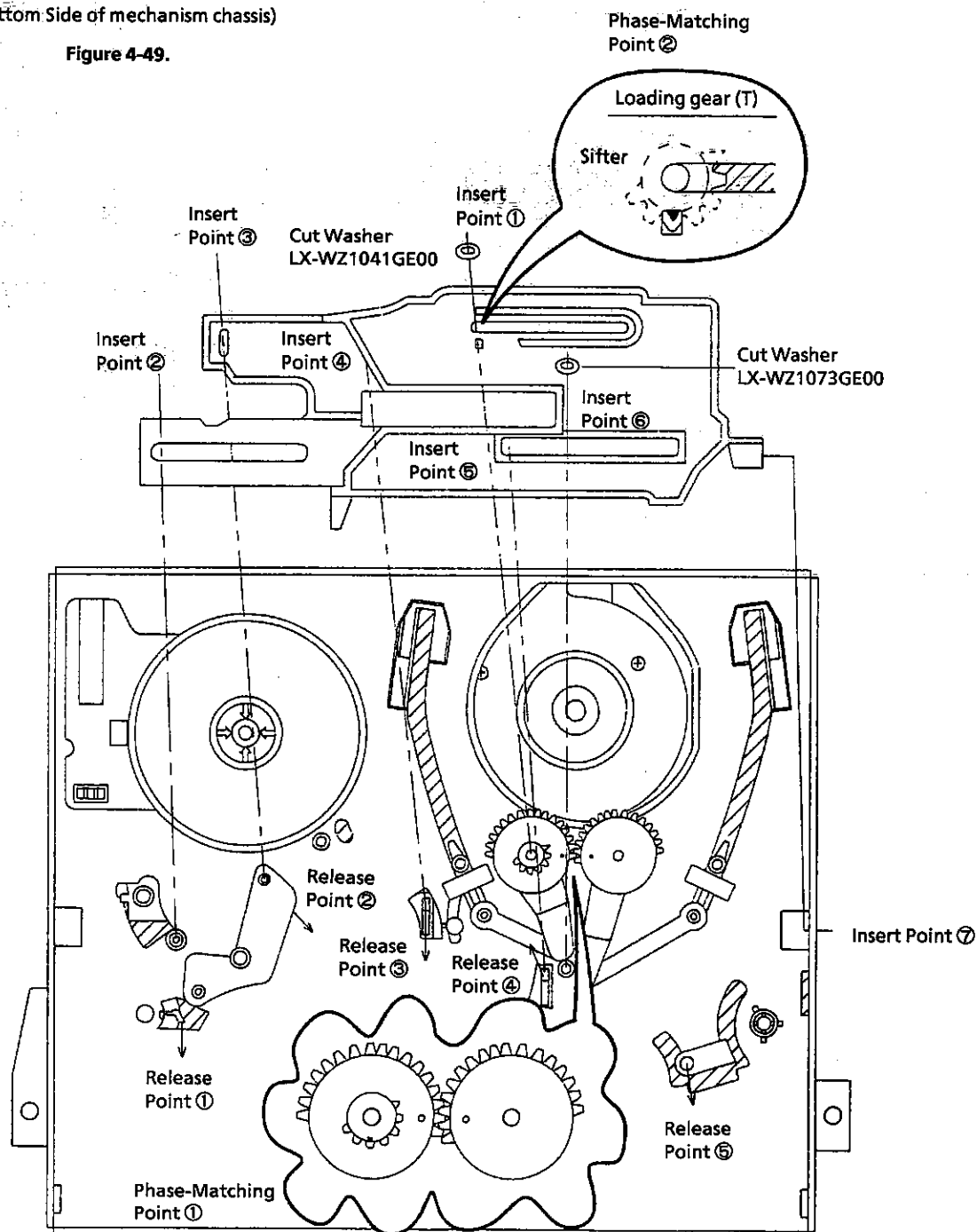


Figure 4-50.

3. Mounting the master cam (on the back of the mechanism chassis).

- (1) Make sure beforehand that the shifter is at the point as shown below.
- (2) Place the master cam in the position as shown below.

Note:

See the figure below for the phase matching between the master cam and the cassette control drive gear.

- (3) Finally fix the master cam with E ring.

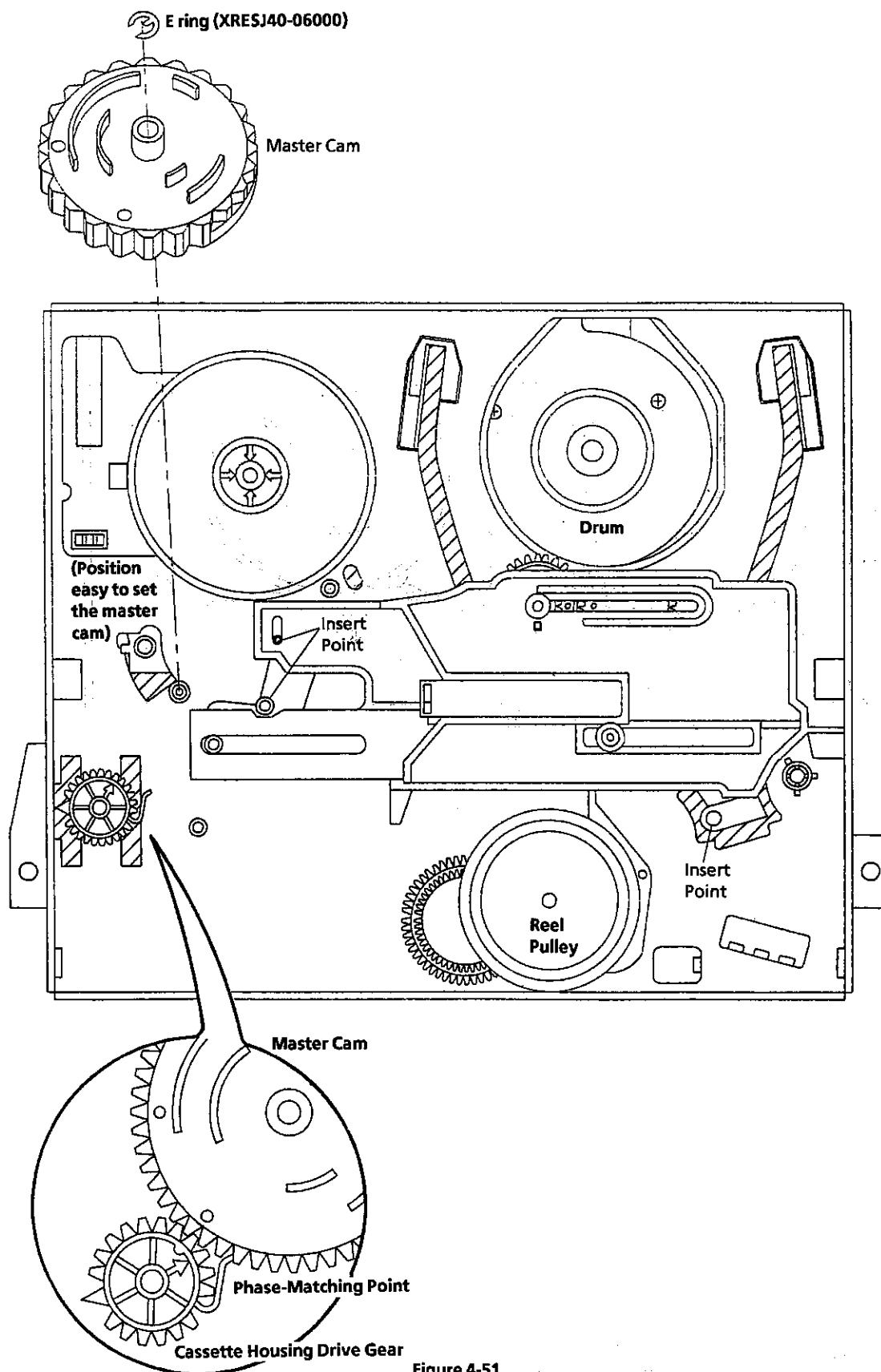


Figure 4-51.

4. Mounting the connection gear, slow brake and loading motor assemblies (on the back of the mechanism chassis):

- (1) Assemble the connect gear.
- (2) Assemble the slow brake.
- (3) Assemble the loading motor unit.

Note:

Let the slow brake leg out of the front of the mechanism chassis. Catch the spring to the take-up fixing guide that is at the left of the A/C head.

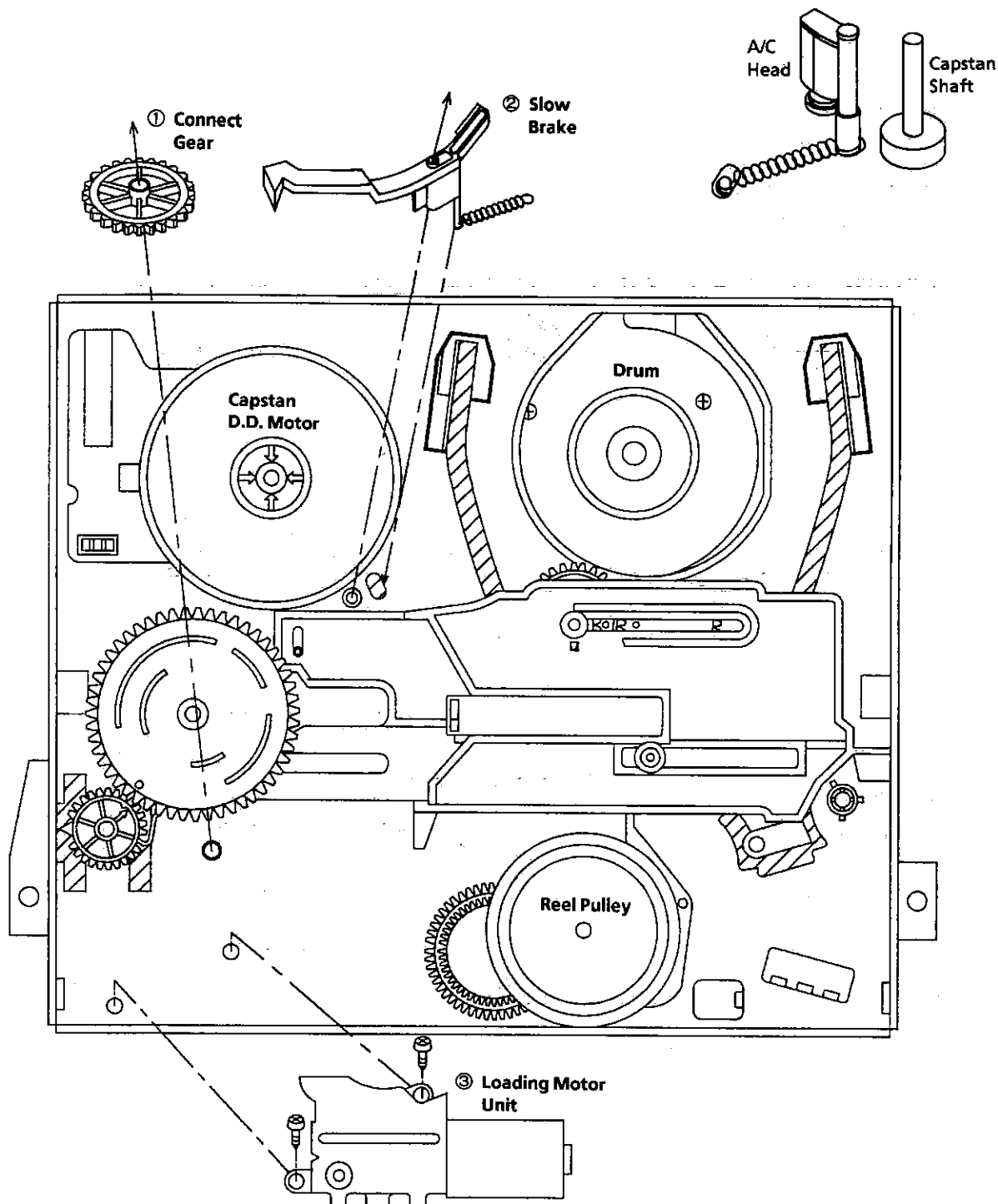


Figure 4-52.

Note:

Before setting up the loading motor, make sure the phase is matched. To do so, turn the connection gear clockwise and check to see if the loading is complete and if the pinch roller comes into contact.

When these actions are made smoothly, return the mechanism to the state as shown above. Finally mount the loading motor unit.

REPLACEMENT OF LOADING MOTOR

● Removal

Remove 2 screws.

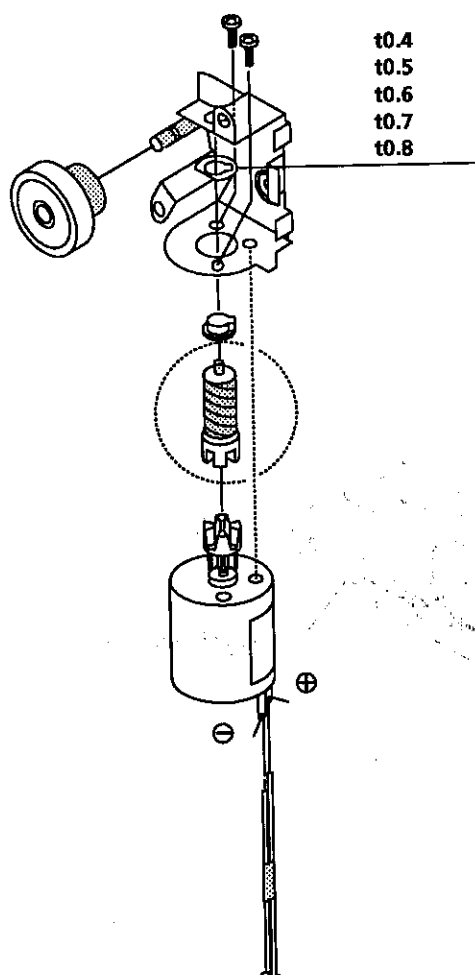


Figure 4-53.

● Replacement

- ① Take out the old loading motor. Place a replacement loading motor as shown above (figure 4-53.).

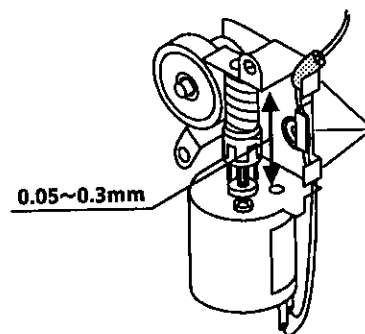


Figure 4-54.

- ② Adjust the worm gear's thrust gap to 0.05 to 0.3 mm.
Use the specific washers for an appropriate thickness.

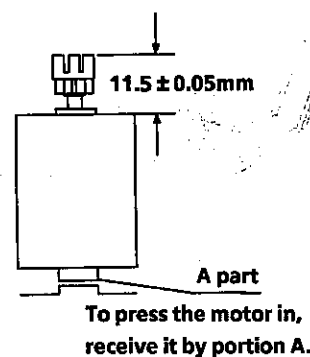


Figure 4-55.

Press-fit the loading motor pulley with a force of less than 98N (10 kgf). Be sure that the pulley is 11.5 ± 0.05 mm away from the motor.

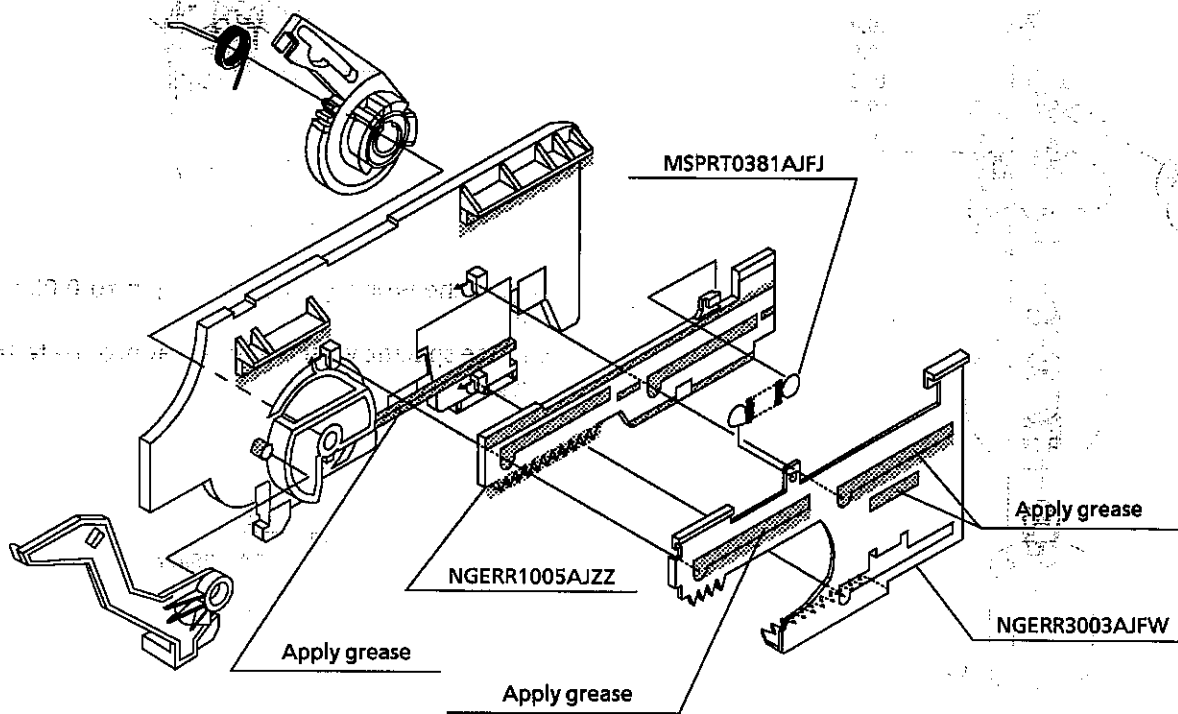
ASSEMBLY OF CASSETTE HOUSING

① Drive Gear R and Drive Angle Ass'y

REPLACEMENT OF LOADING MOTOR

Isomora

Remove & replace



Phase Matching Point

- Fix the drive angle ass'y to the drive gear R as shown in the figure.

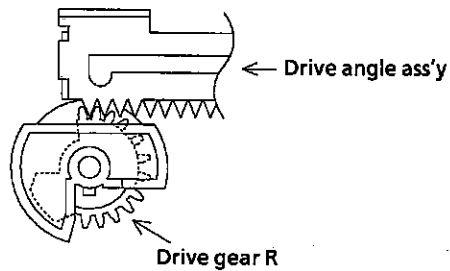


Figure 4-56.

② Synchro Gear, Drive Gear L and Drive Gear R

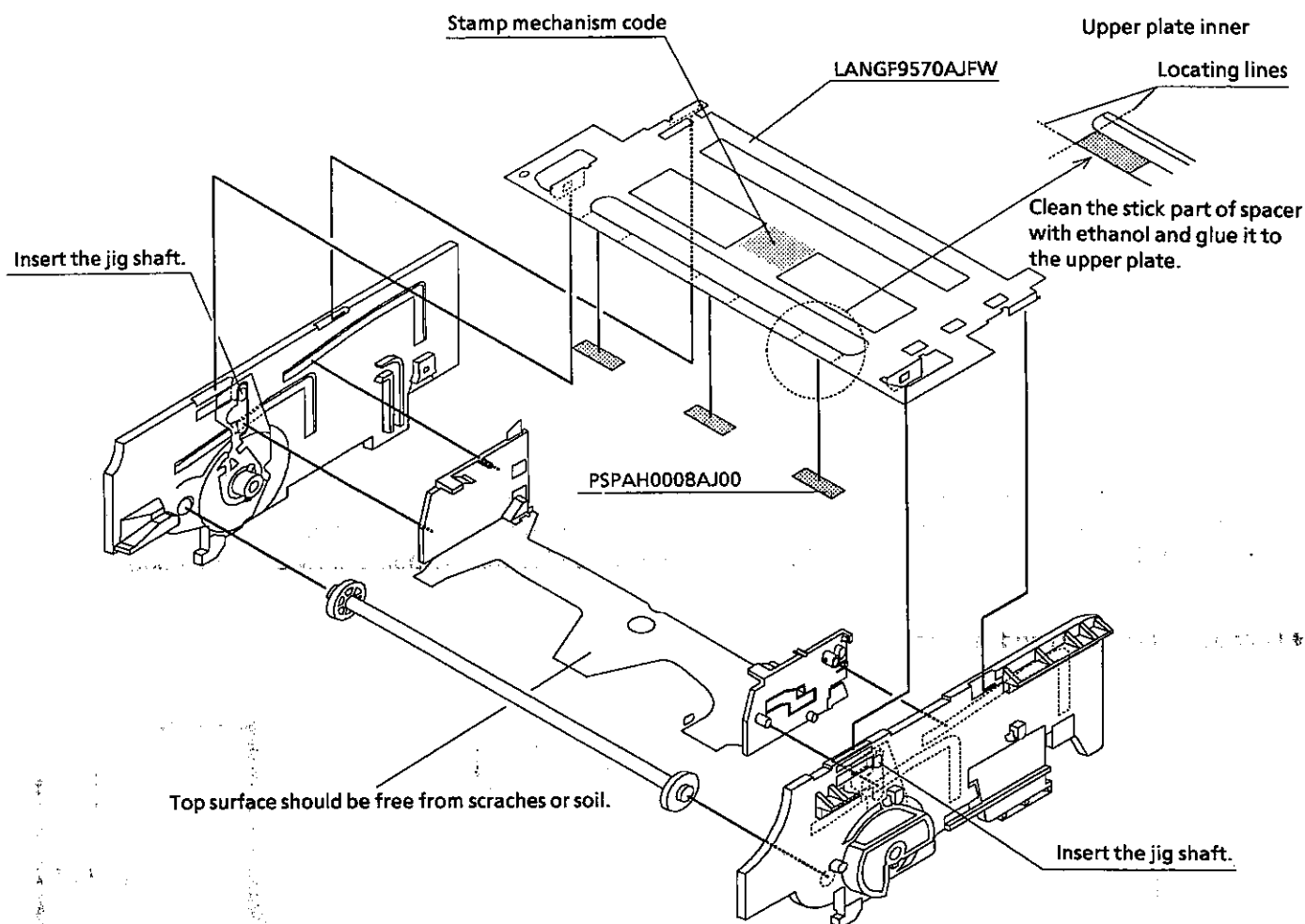


Figure 4-57.

Align the drive gear's round hole with the synchro gear's triangular (\triangle) symbol. Do this alignment for both the drive gears.

Phase Matching Point

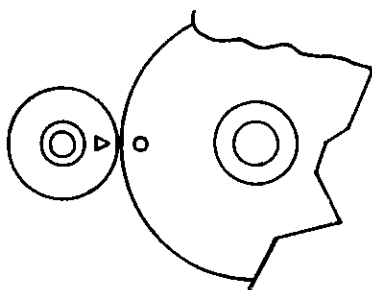


Figure 4-58.

Note:

Do not over-turn both of the drive gears when the phase has been matched. These gears are partially toothless and might come out of mesh with the synchro gear. In such a case, the phase needs re-matching.

SERVO CIRCUIT ADJUSTMENT

ADJUSTMENT OF HEAD SWITCHING POINT

Measuring instrument	Dual-trace oscilloscope Colour TV monitor
Mode	Playback
Cassette	Alignment tape (VROCPSV)
Test point	TP2202 (H. SW. P.) to CH-1 VIDEO OUT jack to CH-2 (CH-1 trigger slope switch at (+), Internal trigger at CH-1 side.)
Specification	$6.5 \pm 0.5H$ (lines)

1. Remove the front panel and play the alignment tape. (VROCPSV)
(Playback picture on the monitor screen.)
2. Make for a moment short-circuit between jumper pins 33 and 34 both located at the left on your side on the main PWB.
Be sure that all the fluorescent display tubes light up into the TEST mode. (See Note below)
3. Press the PLAY button.
Be sure the "PLAY" appears in the fluorescent display tubes flashing (about 1Hz) into the auto PG adjustment operating.

Note:

When the manual PG adjustment, observe the waveform with an oscilloscope and make adjustment FF or REW button so that the specification.

4. Stop the "PLAY" appears in the flashing of fluorescent display tubes at adjusted.
5. Press the STOP button in the return to normal mode.
6. Make this checking of waveform on the oscilloscope screen be as shown in Figure 5-2. just after the head switching point have been adjusted.

Notes:

- ① Set-up of TEST mode.
When the adjustment of HEAD SWITCHING POINT, AUTO TRACKING function is invalid.
- ② When the cassette housing control ass'y is removed, set-up of mechanism operating mode.
 - 1) Replug the AC power cord a few minute later.
 - 2) Making a short-circuit between TP5001 (or jumper pin 241) and TP5002 (or jumper pin 242), both located at the left on your side on the main PWB, with a 22 ohm resistor to center the tracking.
 - 3) AC power cord is plugged in.
 - 4) You can make mechanism operating mode.
Replug the AC power cord a few minute later.

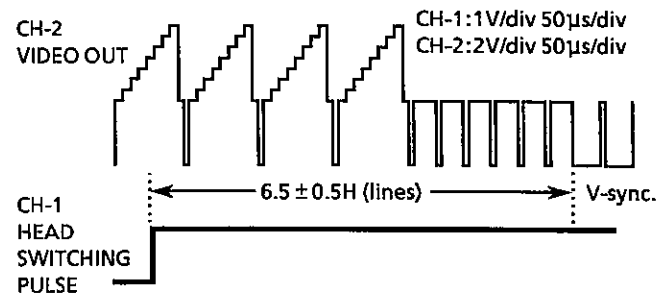


Figure 5-2.

ADJUSTMENT OF SP/LP SLOW TRACKING PRESET

Measuring instrument	Colour TV monitor
Mode	Playback
Cassette	Self-recorded tape (SP/LP mode) (See Note below)
Control	Tracking control buttons (+) or (-)
Specification	Minimized noise on monitor screen

1. Have the unit to receive a good TV broadcast or feed a video signal to the VIDEO IN jack. (See note ② below)
2. Set the tape speed in SP mode by using the remote control and record the signal on tape.
3. Rewind and play the tape where signal was recorded in above step.
4. Press the SLOW button on the remote control, and playback the recorded portion in the slow mode.
5. Make for a moment short-circuit between jumper pins 33 and 34 both located at the left on your side on the main PWB.
Be sure that all the fluorescent display tubes light up into the TEST mode.
6. Look at the monitor screen and adjust the (+) or (-) TRACKING buttons so that the there is noise disappears from the screen.
7. Press the STOP button to return to normal mode.
8. Play the tape a few seconds then press the SLOW button again and make sure there is no noise in the screen.
(For the LP mode put adjustment at the same adjustment way as SP mode.)

Notes:

- ① Self-recorded tape means a cassette whose program was recorded by the unit being adjusted.
- ② The TV program will not be recorded if RCA or 21pin plugs are plugged in to the AUDIO/VIDEO input terminals.

ADJUSTMENT OF FV (False Vertical Sync) OF STILL PICTURE

Measuring instrument	Colour TV monitor
Mode	Playback still
Cassette	Self-recorded tape (SP mode) (See Note below ②)
Control	Tracking control buttons (+) or (-)
Specification	No vertical jitter of picture

1. Play a cassette which was recorded by the unit in SP mode.
2. Press the PAUSE/STILL button to freeze the picture.
3. Look at the monitor screen and adjust (+) or (-) TRACKING buttons so that the vertical jitter of the picture to be minimized.
4. Play and freeze the self-recorded tape in SP mode and make sure vertical jitter of the picture is not noticeable.
(For the LP mode put adjustment at the same adjustment way as SP mode.)

Note:

- ① The FV goes back to the it's initial state when the unit is put into the system controller reset mode due to power failure, etc.
In this case, preset the FV once again.
- ② Self-recorded tape is a cassette whose program was recorded by the unit being adjusted.

Y/C CIRCUIT ADJUSTMENT

CHECKING OF VIDEO E-E LEVEL

Measuring instrument	Oscilloscope
Mode	E-E or Record
Input signal	EIA colour bar (1.0Vp-p)
Test point	VIDEO OUT jack
Specification	$1.0 \pm 0.1\text{Vp-p}$

1. Connect a 75 ohm terminating resistor to the VIDEO OUT jack and connect an oscilloscope across this terminating resistor.
(See Note below.)
2. Feed a colour bar signal to the VIDEO IN jack.
3. Make sure that the E-E signal amplitude is 1.0 Vp-p as shown in Figure 5-3.

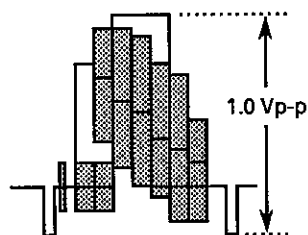


Figure 5-3.

Note:

If the 75 ohm terminating resistor is missing, the signal amplitude will be doubled.

CHECKING OF WHITE CLIP LEVEL

Measuring instrument	Oscilloscope
Mode	E-E or Record
Input signal	EIA colour bar (1.0Vp-p)
Test point	Pin (48) of IC401, GND
Specification	$190 \pm 5\%$ (See note below)

1. Connect a oscilloscope to Pin (48) of IC401 and GND.
2. Feed the colour bar signal to the VIDEO IN jack and set the unit in E-E or recording mode.
3. Make sure that the overshoot of the video signal is clipped at 190% as shown in Figure 5-4.

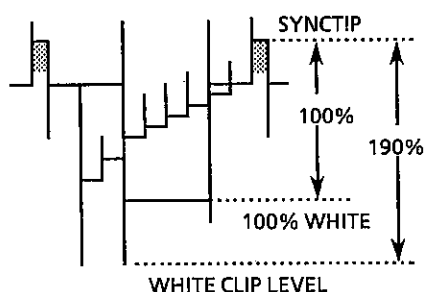


Figure 5-4.

Note:

From sync tip to white peak, the level is 100%.

The white clip level is 90% above the white level.

CHECKING OF RECORD LEVEL

Measuring instrument	Oscilloscope
Mode	Record mode
Input signal	EIA colour bar (1.0Vp-p)
Test point	Pin (26) of IC301, GND.
Specifications	4head models (SP mode) Chroma (Red) : $47 \pm 4\text{mVp-p}$ Sync tip : $200 \pm 30\text{mVp-p}$ <hr/> 4head models (LP mode) Chroma (Red) : $34 \pm 3\text{mVp-p}$ Sync tip : $170 \pm 20\text{mVp-p}$

1. Feed the colour bar signal to the VIDEO IN jack and set the unit in recording mode.
2. Connect an oscilloscope to shown in table.
3. Make a short circuit between pin (52) of IC401 and the GND using a $47\mu\text{F}/16\text{V}$ capacitor to minimize the FM luminance signal.
4. Make sure so that the amplitude of the chroma (red) portion is specified as shown in Figure 5-5(a).
5. Disconnect the capacitor that was connected in step 3.
6. Make sure so that the amplitude of the sync tip portion is specified as shown in Figure 5-5(b).

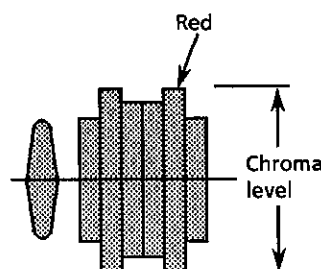


Figure 5-5(a).

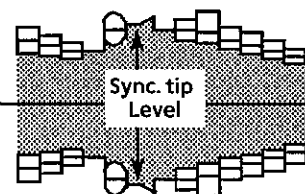


Figure 5-5(b).

CHECKING OF PLAYBACK LEVEL

Measuring instrument	Oscilloscope
Mode	Record/Playback
Input signal	EIA colour bar (1.0Vp-p)
Test point	VIDEO OUT jack
Specification	$1.0 \pm 0.1\text{Vp-p}$

1. Be sure that E-E level has been correctly specified.
2. Connect a 75 ohm terminating resistor to the VIDEO OUT jack and connect an oscilloscope across this terminating resistor.
(See Note below.)
3. Feed a colour bar signal to the VIDEO IN jack and set the unit in recording mode.
4. Play the colour bar portion of the recorded tape.
5. Make sure that the output signal amplitude is 1.0Vp-p as shown in Figure 5-6.

Note:

If the 75 ohm terminating resistor is missing, the signal amplitude will be doubled.

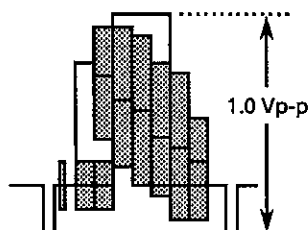


Figure 5-6.

AUDIO CIRCUIT

CHECKING OF E-E LEVEL

Measuring instrument	AC milli-voltmeter
Mode	E-E/Record
Input signal	1kHz, -8.0dB (at RCA type jack) 1kHz, -3.8dB (at 21 pin type jack)
Test point	AUDIO OUT jack
Specification	-8.0 ± 2dB (at RCA type jack) -3.8 ± 2dB (at 21 pin type jack)

1. Connect an oscilloscope to the AUDIO OUT jack.
2. Feed the audio signal shown in table to the AUDIO IN jack.
3. Put the unit in E-E or recording mode.
4. Make sure that the output level is value shown in table.

CHECKING OF AUDIO PLAYBACK LEVEL

Measuring instrument	AC milli-voltmeter.
Mode	Playback
Input signal	Alignment tape. (VROCPSV) (1kHz level control signal)
Test point	AUDIO OUT jack
Specification	-9 ^{+2dB} _{-1dB}

1. Playback the Alignment tape. (VROCPSV 1kHz level audio signal)
2. Connect an AC milli-voltmeter to the AUDIO OUT jack.
3. Make sure that the output level is value shown in table.

CHECKING OF AUDIO RECORD LEVEL

Measuring instrument	AC milli-voltmeter
Mode	Record/playback
Input signal	1kHz, -8.0dB (at RCA type jack) 1kHz, -3.8dB (at 21 pin type jack)
Test point	AUDIO OUT jack
Specification	-8.0 ± 3dB (at RCA type jack) -3.8 ± 3dB (at 21 pin type jack)

1. Connect an oscilloscope to the AUDIO OUT jack.
2. Feed the audio signal shown in table to the AUDIO IN jack.
3. Make the self-recording and playback of the signal.
4. Make sure that the output level is value shown in table.
If it is out of specified value, verify the bias current (ADJUSTMENT OF AUDIO BIAS CURRENT below).

ADJUSTMENT OF AUDIO BIAS CURRENT

Measuring instrument	AC milli-voltmeter
Mode	Record
Input signal	Not required
Test point	TP601 (+)~TP602 (-)
Control	R634 Bias current control
Specification	2.5 ± 0.1mVrms.

1. Connect an AC milli-voltmeter to TP601 (+) and TP602 (-).
(Use TP602 for ground lead.)
2. Put the unit in recording mode.
3. Adjust R634 so that the AC milli-voltmeter read is 2.5 ± 0.1mVrms.

CHECKING OF ERASE VOLTAGE AND OSCILLATION FREQUENCY

Measuring instrument	Oscilloscope
Mode	Record
Test point	Full erase head
Control	T601
Specification	70 ± 5kHz, 40Vp-p or greater.

1. Put the unit in record mode.
2. Connect an oscilloscope across the full erase head.
3. Make sure the erase voltage across the full erase head is approx. 40Vp-p or more and frequency is 70 ± 5kHz.

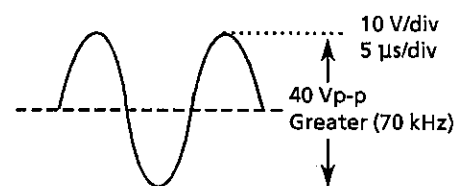


Figure 5-7.

RF CIRCUIT

ADJUSTMENT OF RF AGC CIRCUIT (EXCEPT G/S Version)

Measuring instrument	Oscilloscope
Mode	Good TV Commercial broadcast reception
Test point	TP1502 (Sig.), TP1501 (GND)
Control	VR001 AGC control
Specification	Just before shrinking (See of Figure 5-8.)

1. Have the unit received good TV commercial broadcast reception.
(Input field strength: 80dB μ V of antenna terminal.)
2. Connect an oscilloscope to test points TP1502 (Sig.) and TP1501 (GND).
3. Observe the video output terminal waveform on the oscilloscope.
Adjust VR001 (AGC control) in the IF pack until the noise disappears from the oscilloscope screen and the waveform nearly comes into sync.

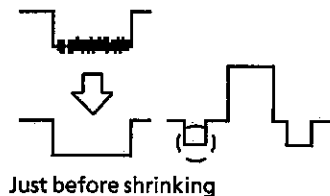


Figure 5-8.

ADJUSTMENT OF RF AGC CIRCUIT (G/S-Version ONLY)

Measuring instrument	DC voltmeter VHF signal generator
Mode	RF signal at E12-CH (by VHF signal generator) (EBU colour bar signal at 87.5% modulated.)
Test point	TP1503 (+), TP1501 (-)
Control	VR001 AGC control
Specification	4.5 \pm 0.1V (When the tuner make use of VTUVTSH6HZ50/) 4.5 \pm 0.1V (When the tuner make use of VTUOF4EG-721F) 4.5 \pm 0.1V (When the tuner make use of VTUOF4EG-721F)

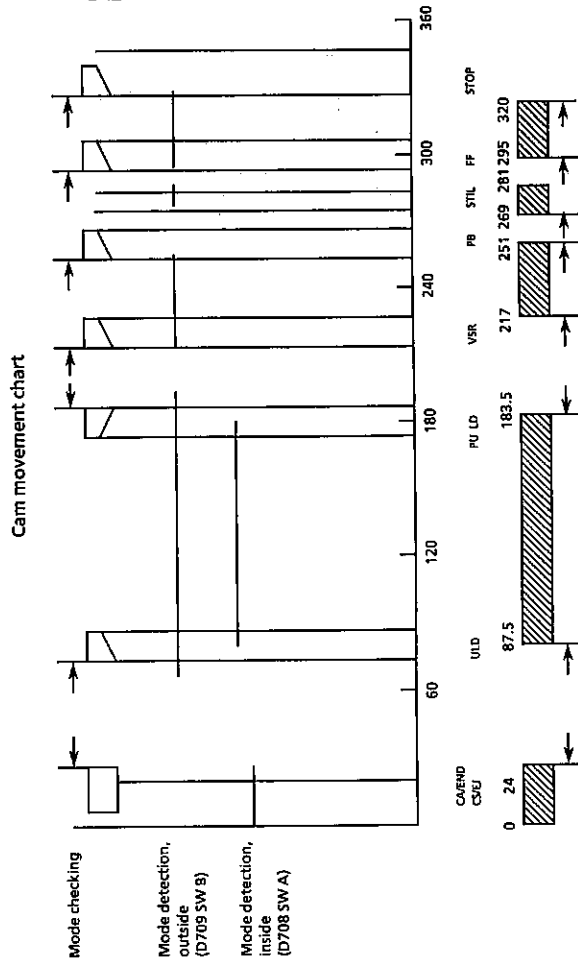
1. Receive the E12 channel signal (colour bar signal at 87.5% modulated.) at input field strength: 70dB μ V of antenna terminal.

2. Connect a DC voltmeter to test points TP1503 (+) and TP1501 (-).
3. Adjust VR001 (AGC control) in the IF pack so that the voltage be specified.

6. MECHANISM OPERATION FLOW CHART AND TROUBLESHOOTING GUIDE

MECHANISM OPERATION FLOWCHART

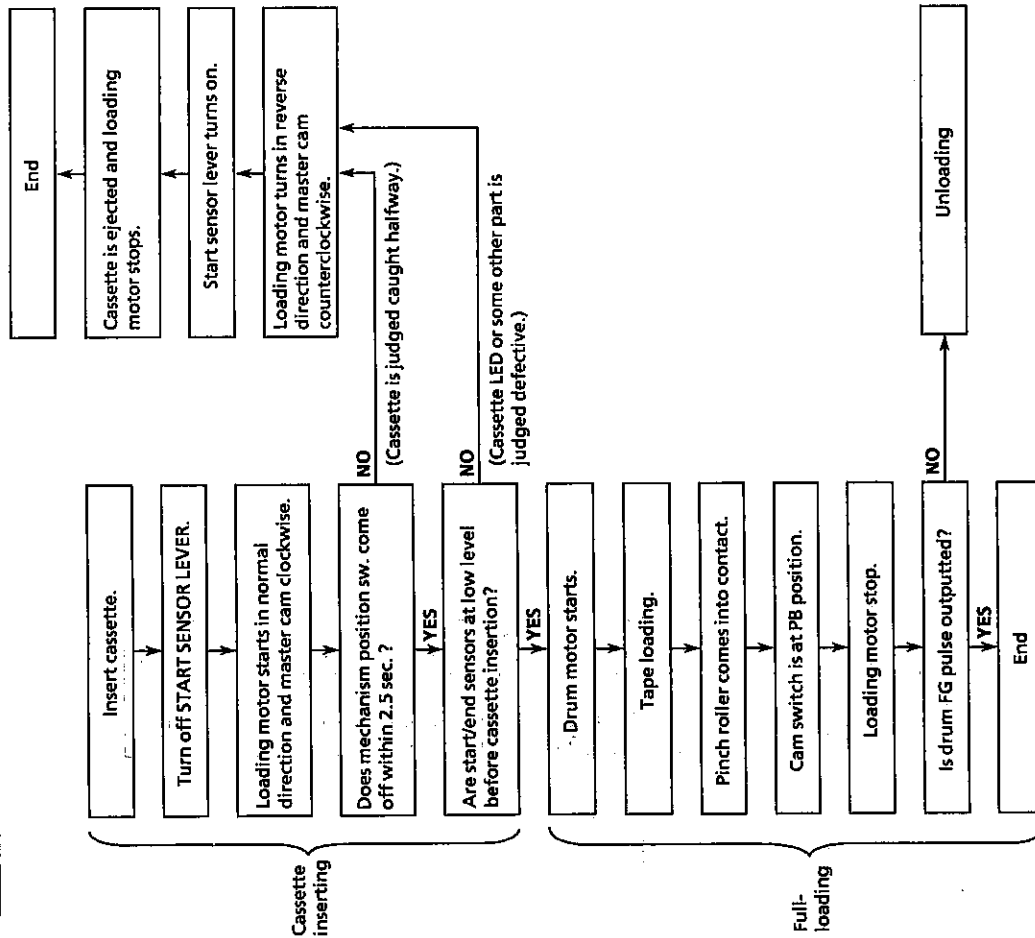
* This flowchart describes the outline of the mechanism's operation, but does not give its details.



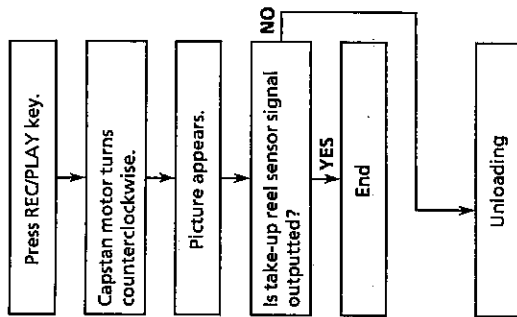
	CS/EJ	UID	PU LD	VSR	PB	STL	FF	STOP
Mode detection, outside	0	0	0	1	1	1	0	1
Mode detection, inside	1	1	0	0	1	0	0	0
S sensor	1	1	0	1	0	0	0	0

open
start sensor close

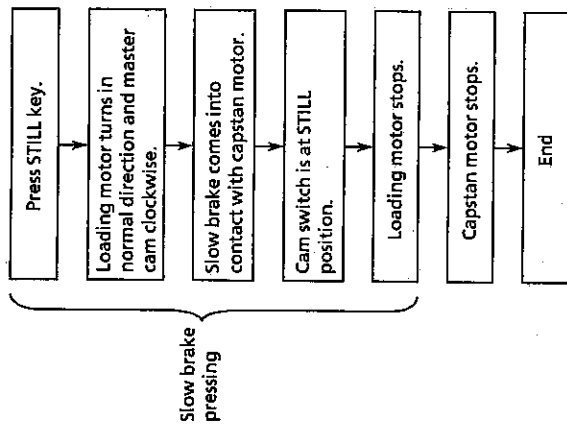
CASSETTE INSERTION → STOP



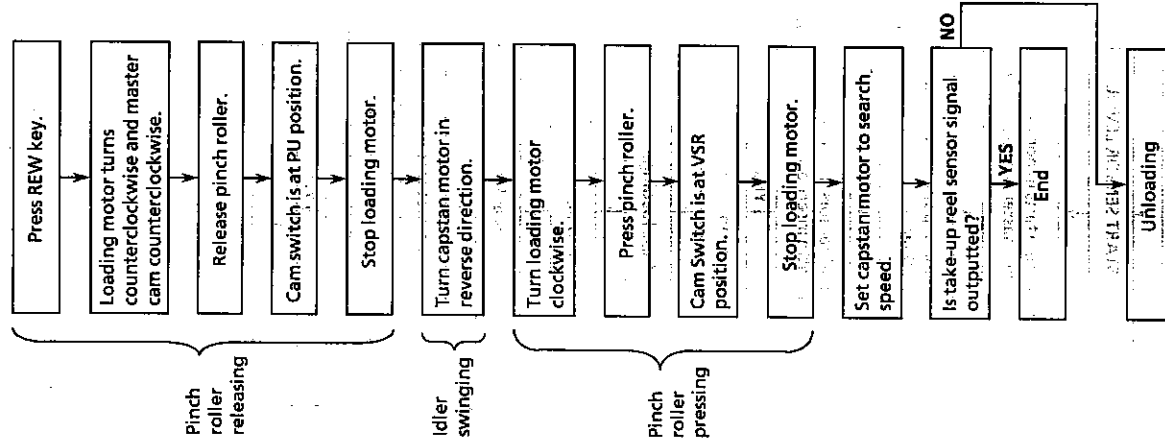
STOP → RECIPLAY



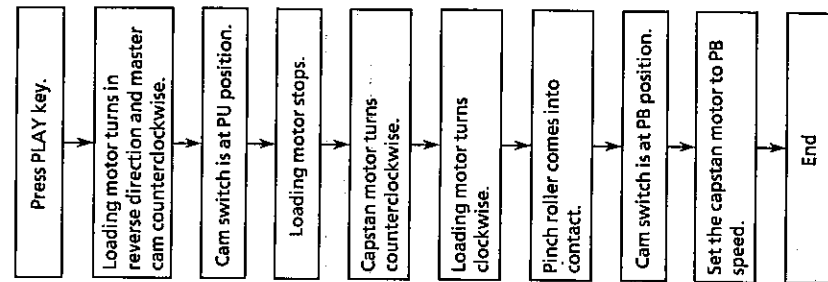
PLAY → STILL



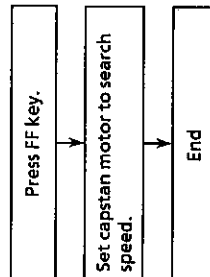
PLAY → VSR



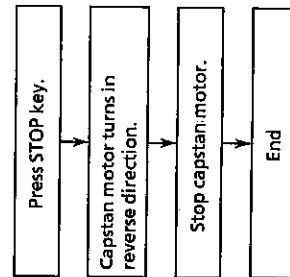
VSR → PLAY

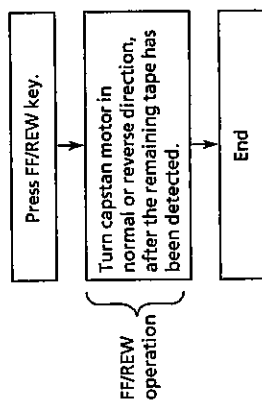
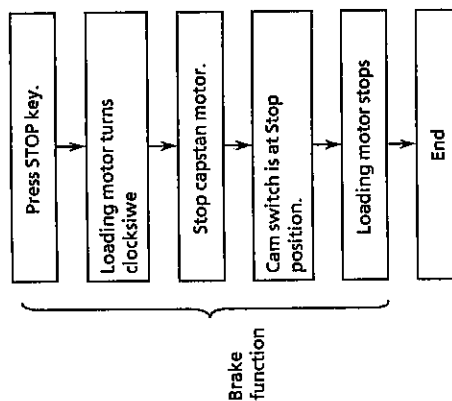
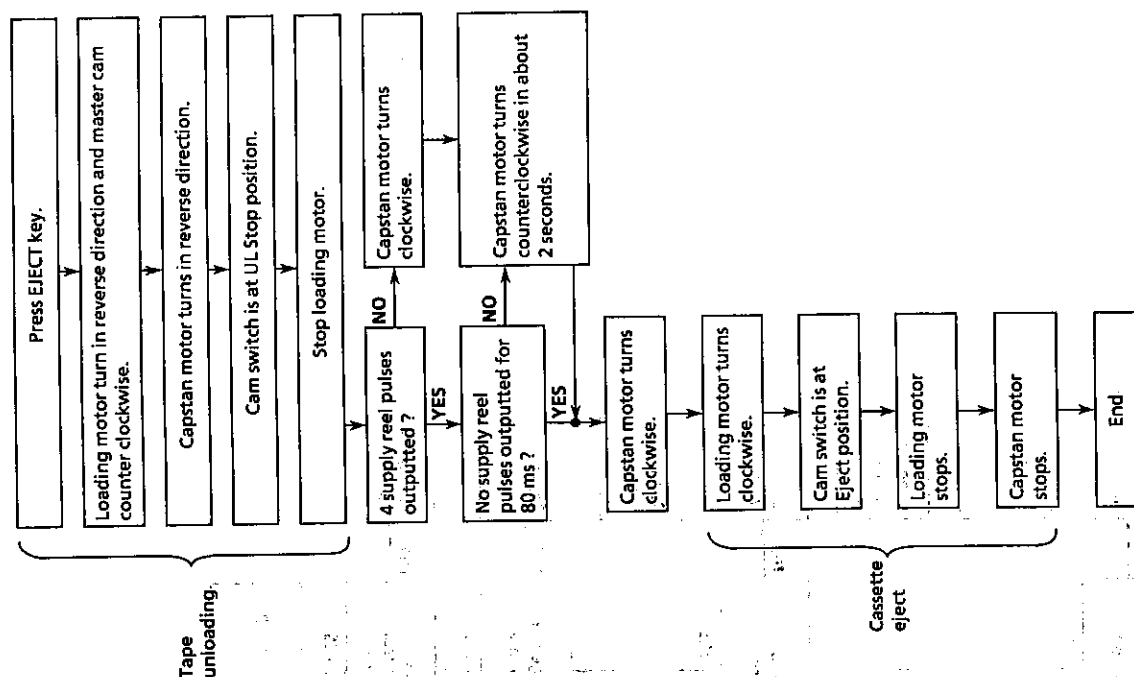


PLAY → VSE



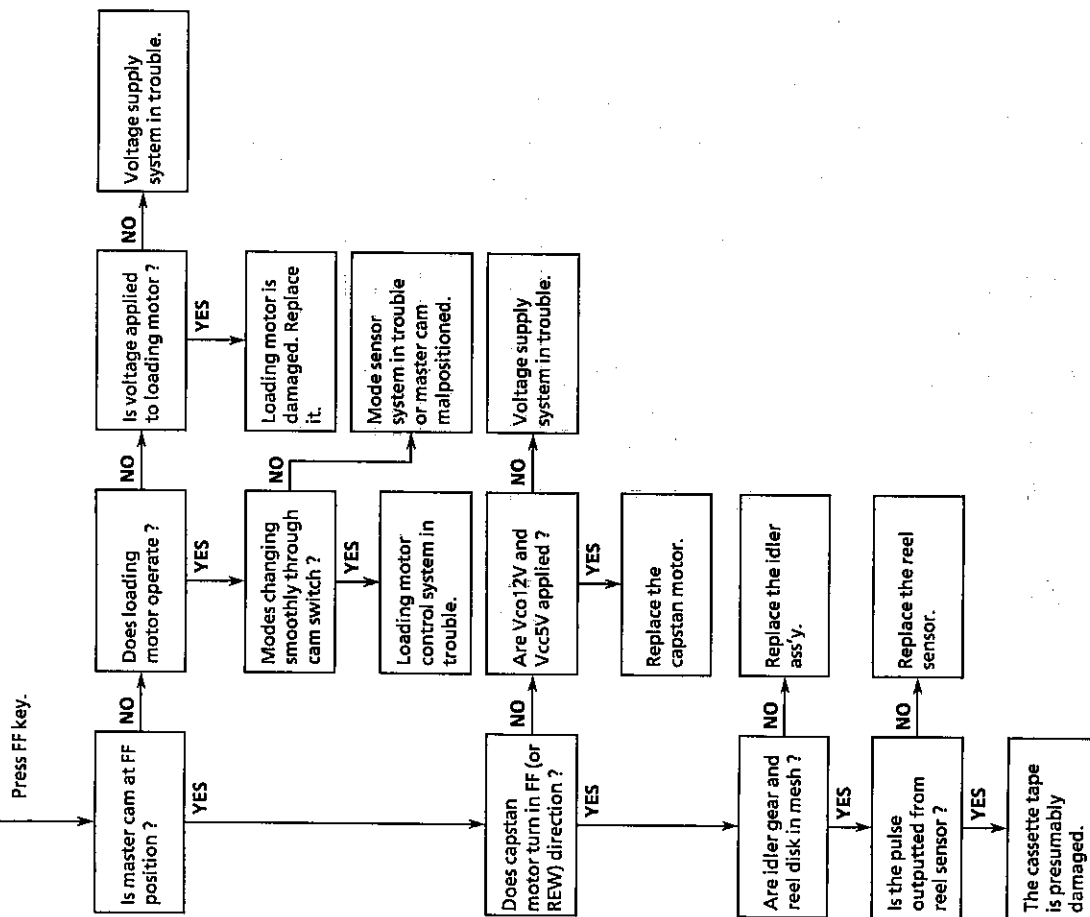
RECIPLAY → STOP



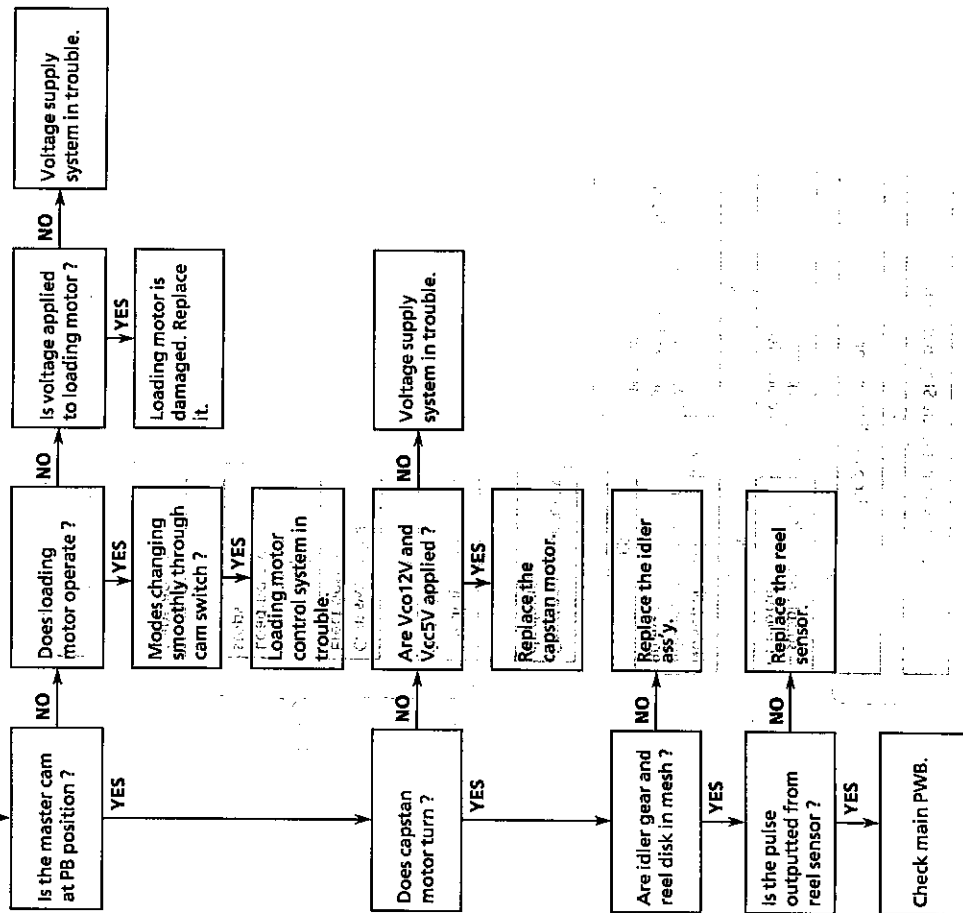
STOP → FF/REWFF/REW → STOPSTOP → CASSETTE EJECT

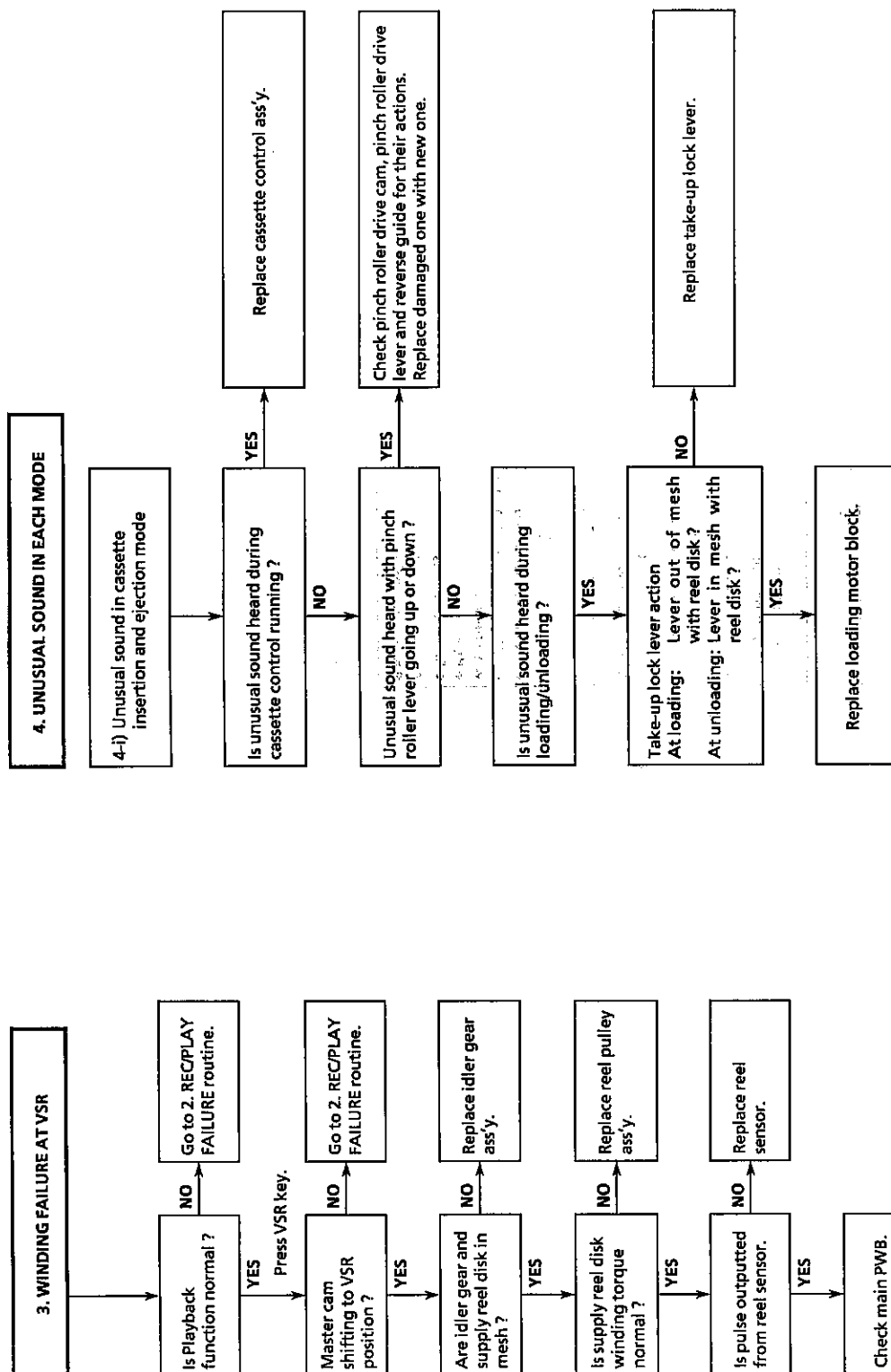
MECHANISM TROUBLESHOOTING

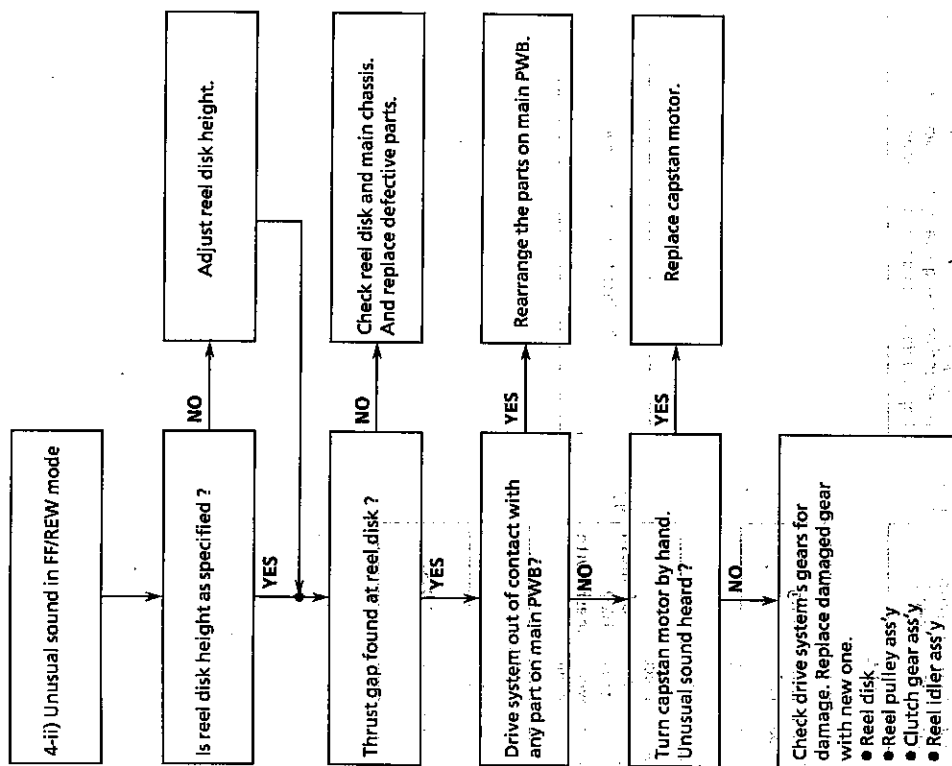
1. FF/REW FAILURE (NO TAPE WINDING)



2. REPLAY FAILURE (MODE RELEASE)

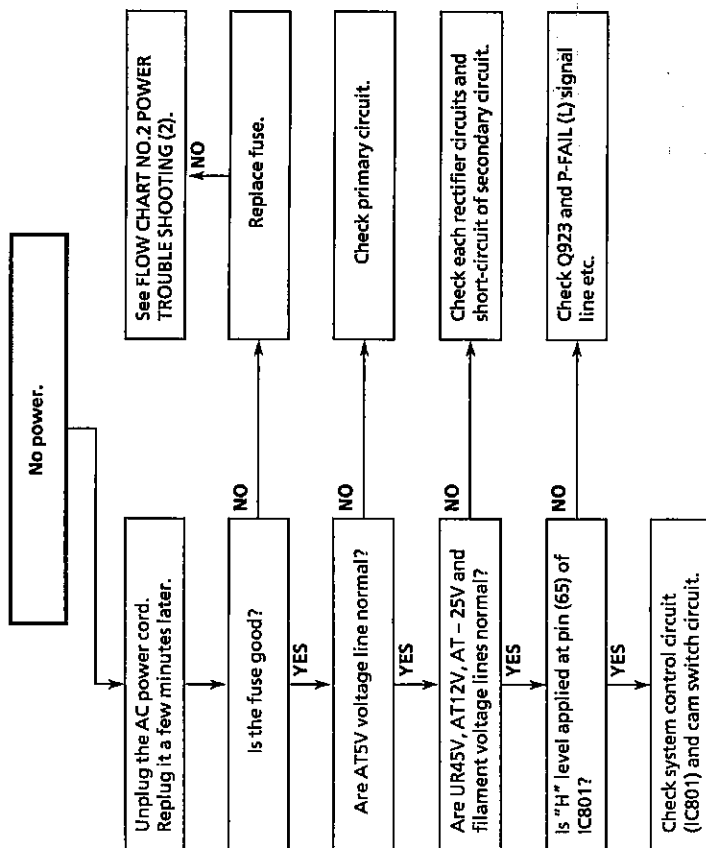




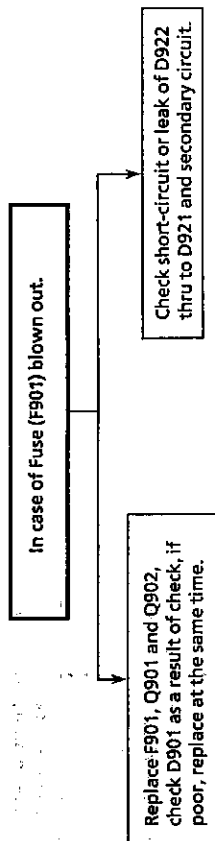


7. TROUBLESHOOTING

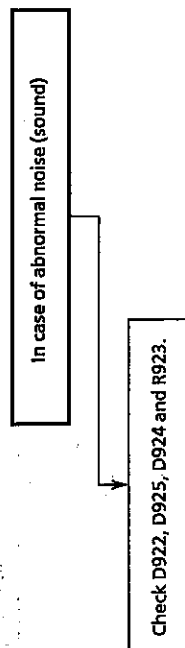
FLOW CHART NO.1 POWER TROUBLESHOOTING (1)



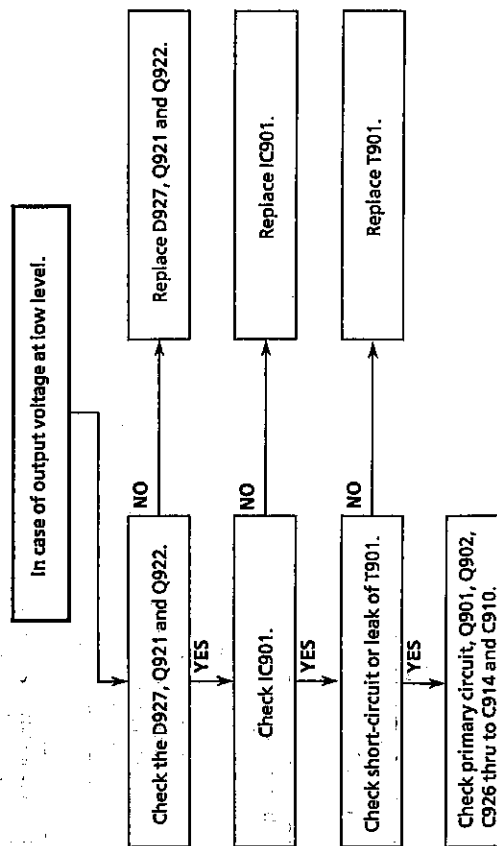
FLOW CHART NO.2 POWER TROUBLESHOOTING (2)



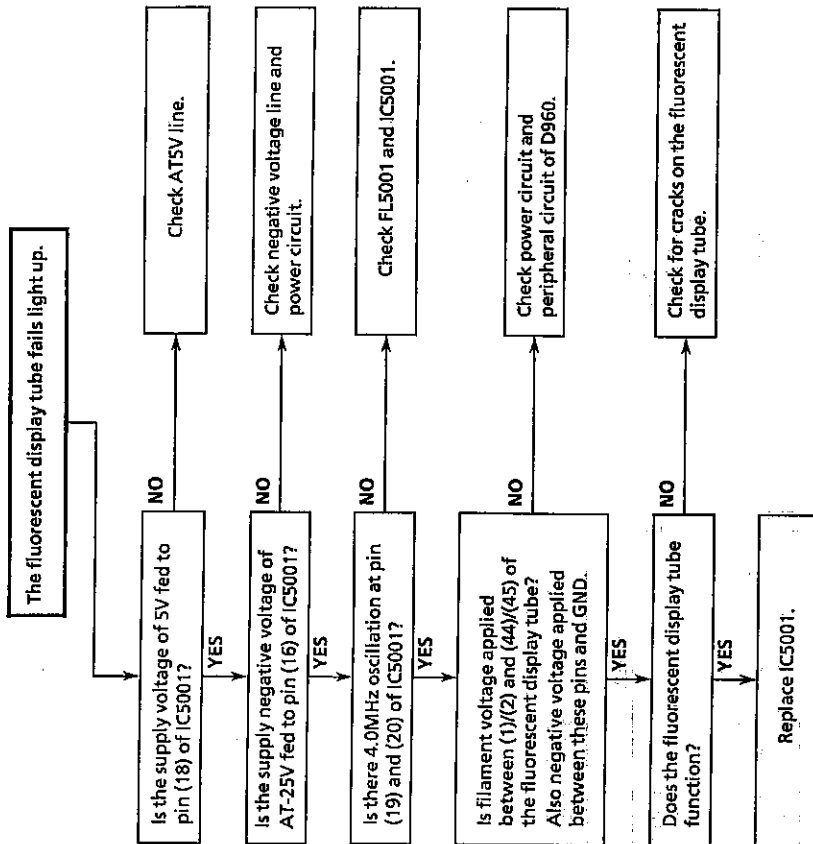
FLOW CHART NO.3 POWER TROUBLESHOOTING (3)



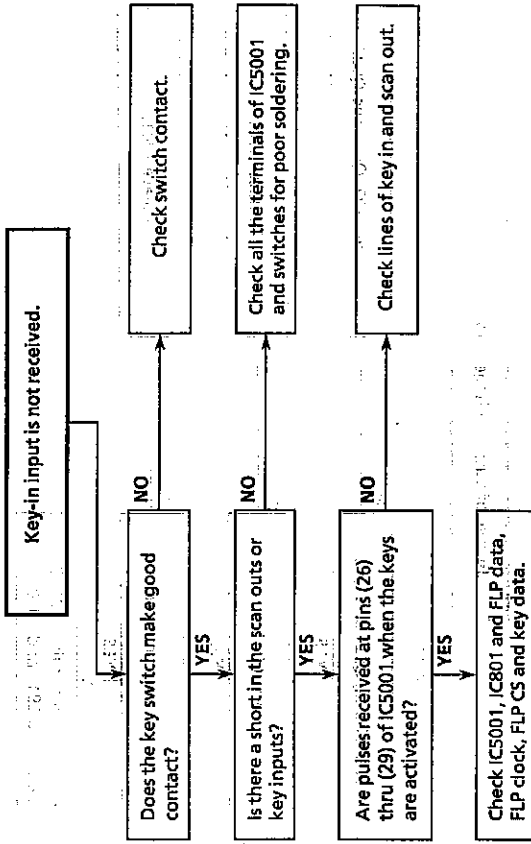
FLOW CHART NO.4 POWER TROUBLESHOOTING (4)



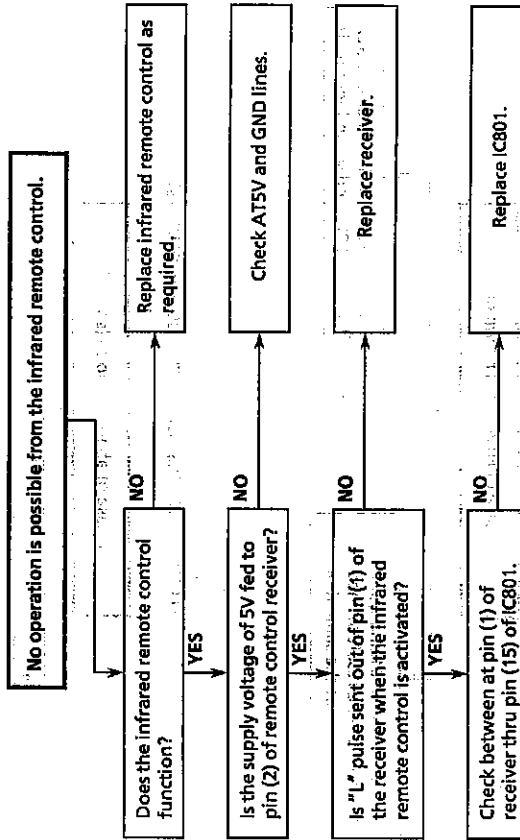
FLOW CHART NO.5 TIMER (1) TROUBLESHOOTING



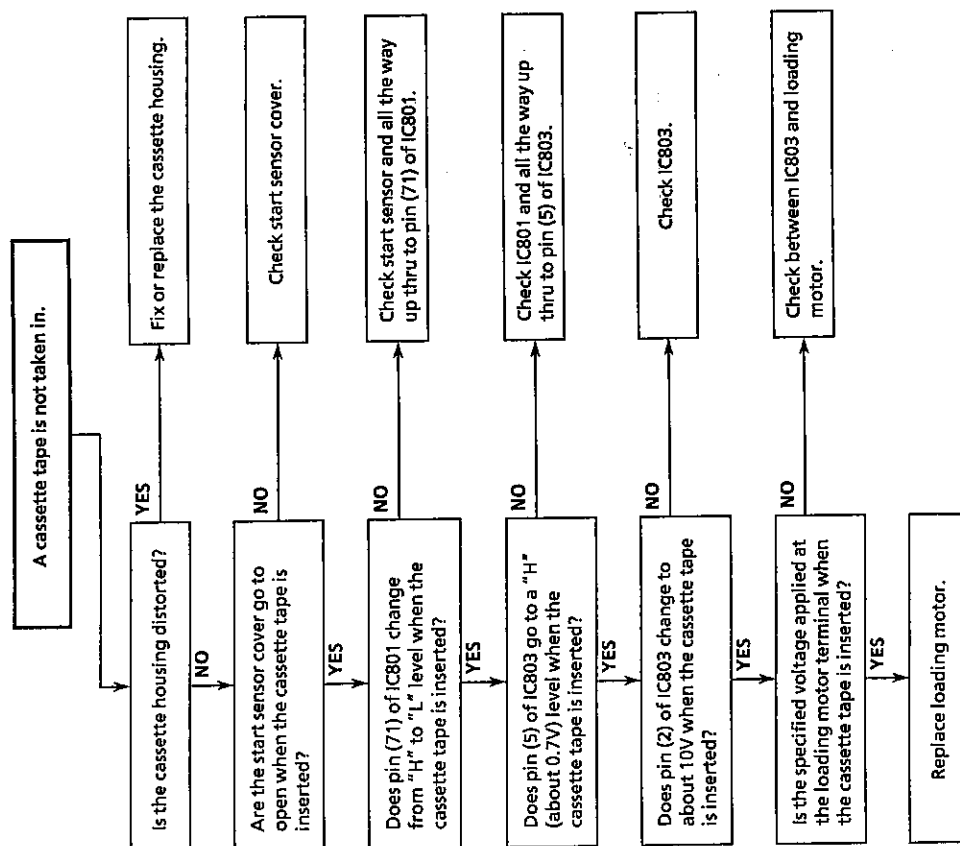
FLOW CHART NO.6 TIMER (2) TROUBLESHOOTING



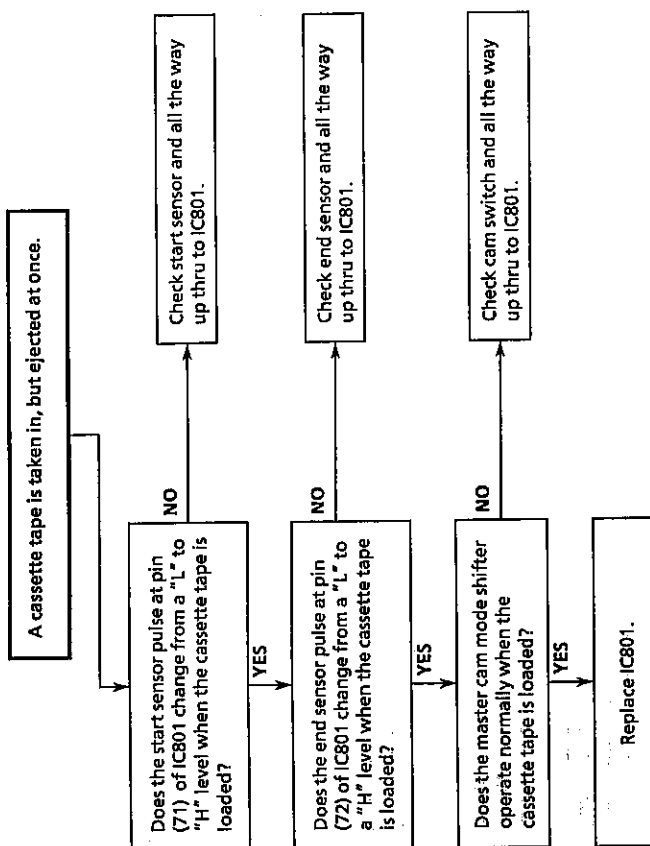
FLOW CHART NO.7 INFRARED R/C TROUBLESHOOTING



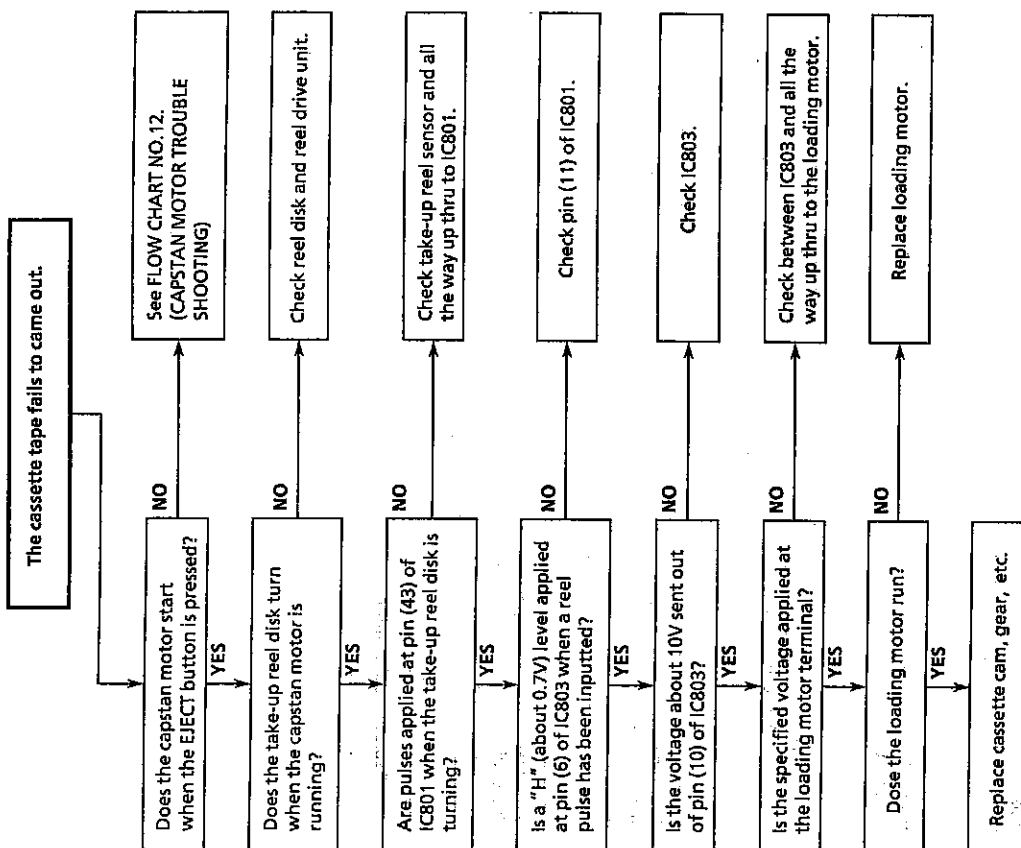
FLOW CHART NO.8 CASSETTE CONTROL TROUBLESHOOTING (1)



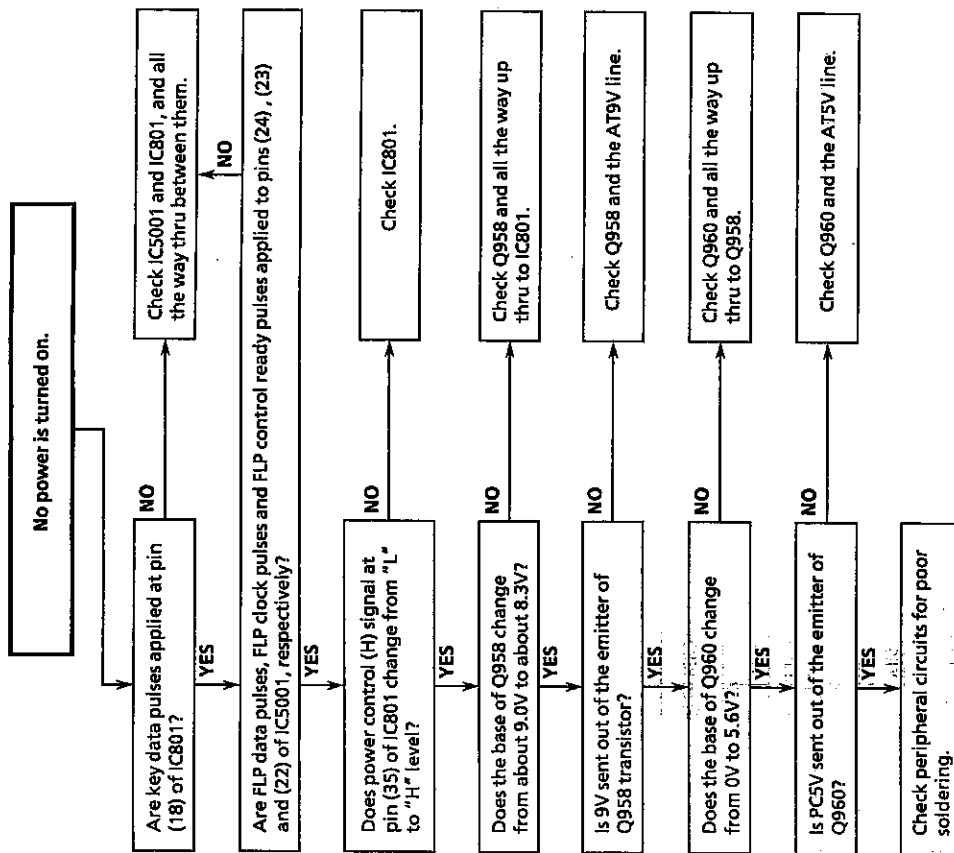
FLOW CHART NO.9 CASSETTE CONTROL TROUBLESHOOTING (2)



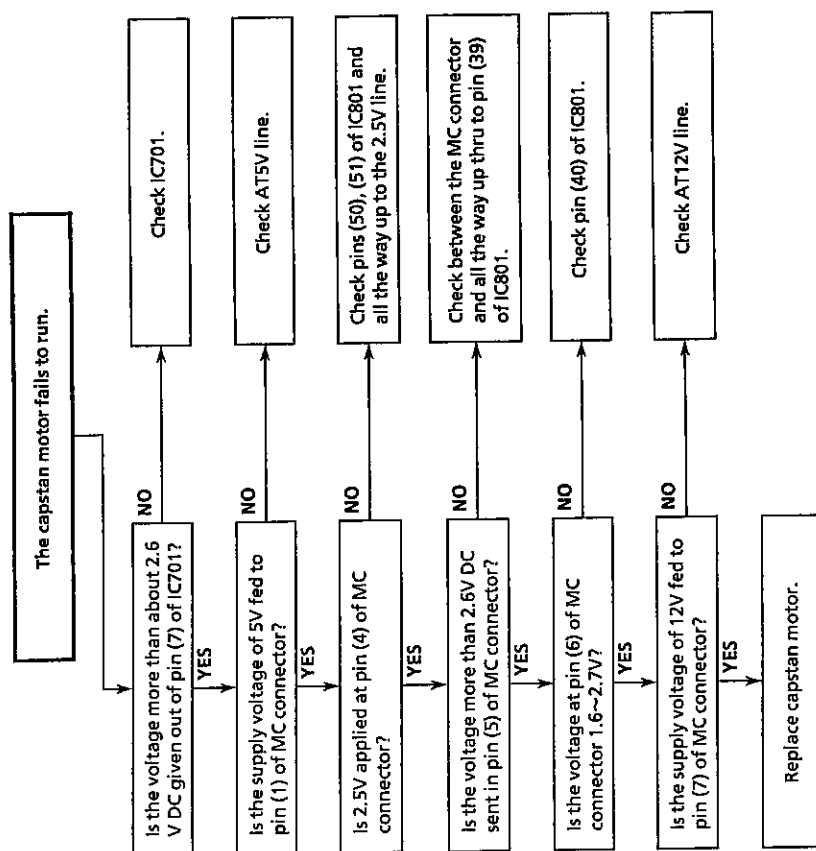
FLOW CHART NO.10 LOADING MOTOR AND EJECT TROUBLESHOOTING



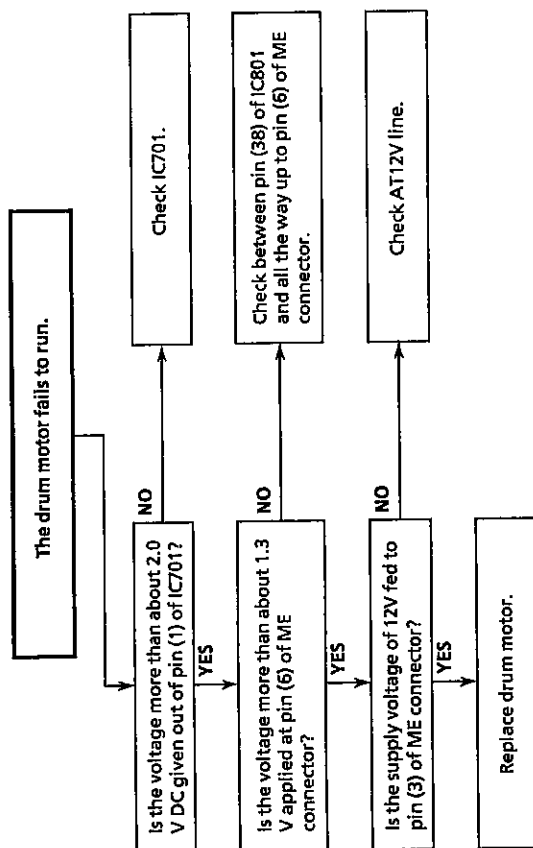
FLOW CHART NO.11 SYSTEM CONTROL TROUBLESHOOTING



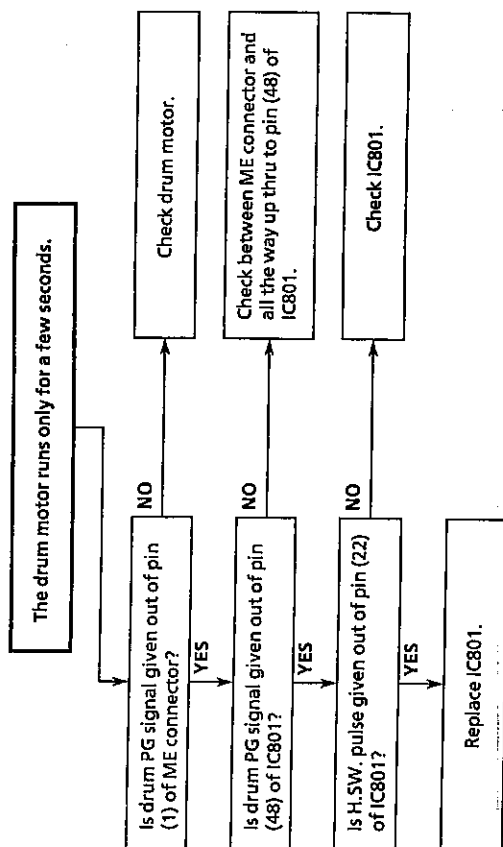
FLOW CHART NO.12 CAPSTAN MOTOR TROUBLESHOOTING



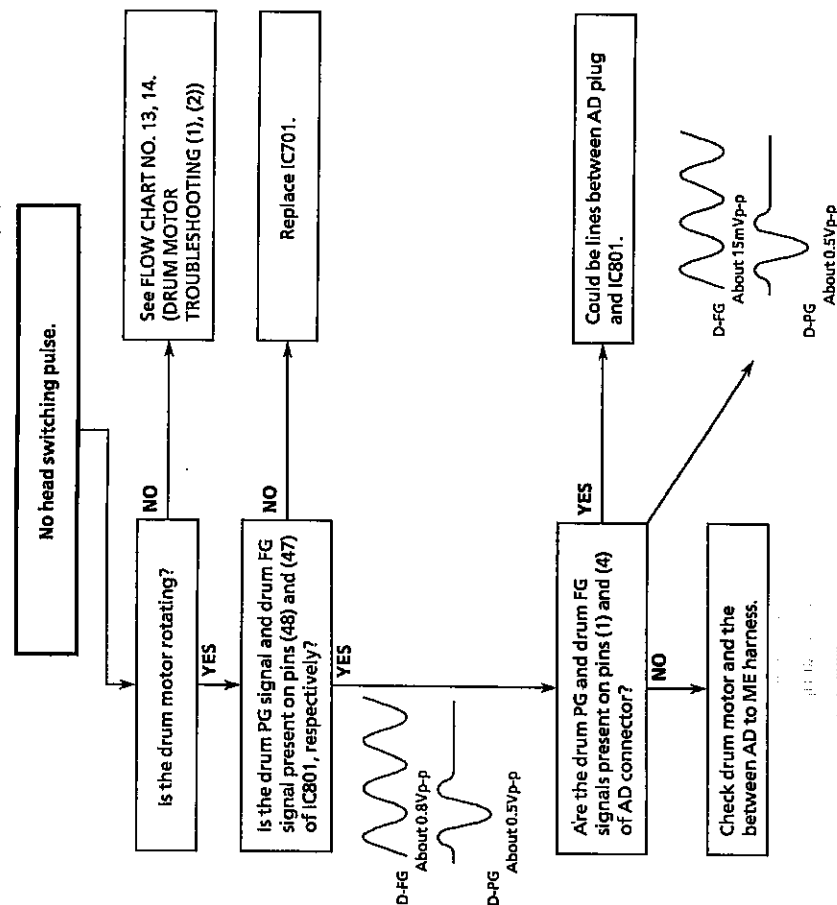
FLOW CHART NO.13 DRUM MOTOR TROUBLESHOOTING (1)



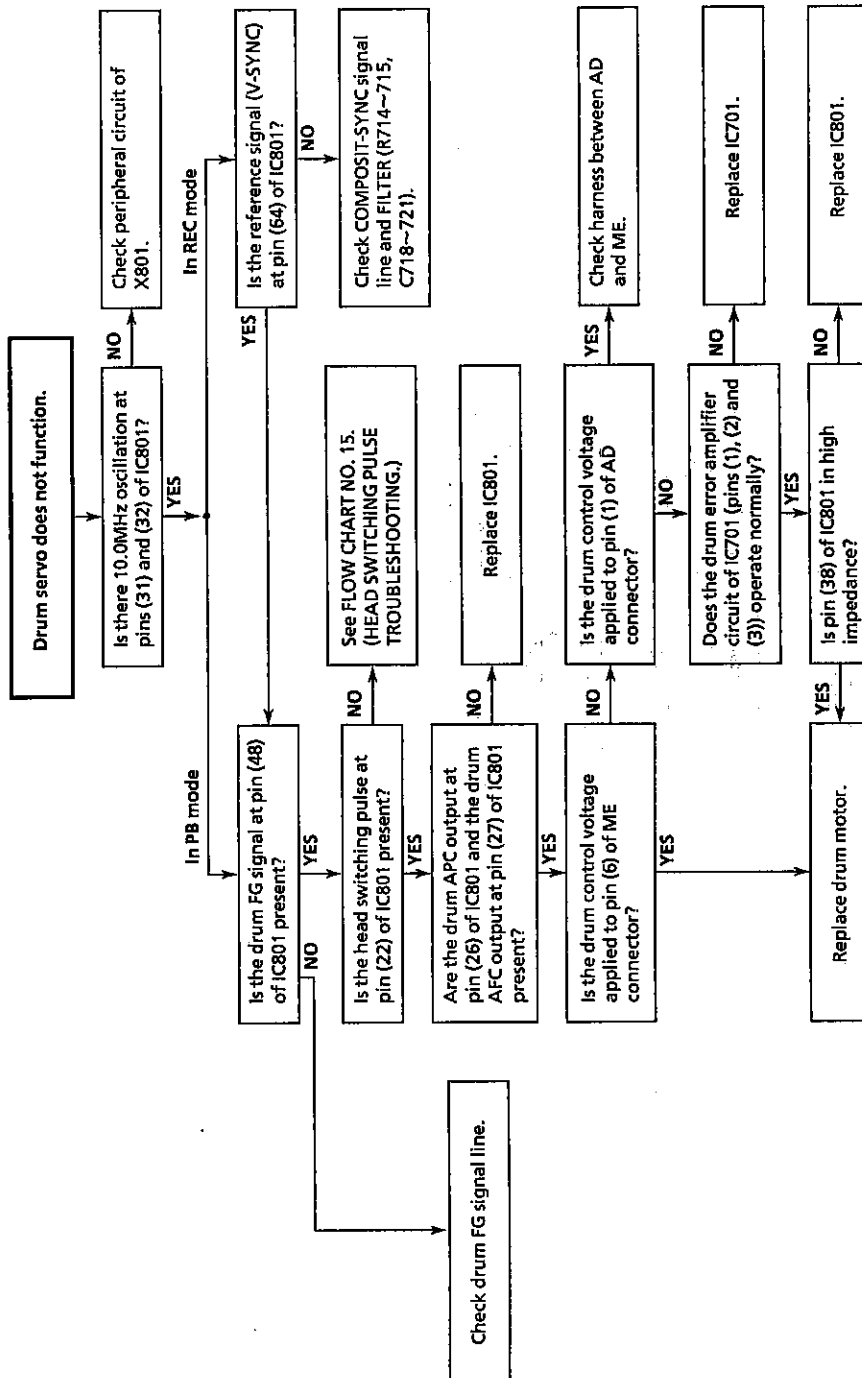
FLOW CHART NO. 14 DRUM MOTOR TROUBLESHOOTING (2)



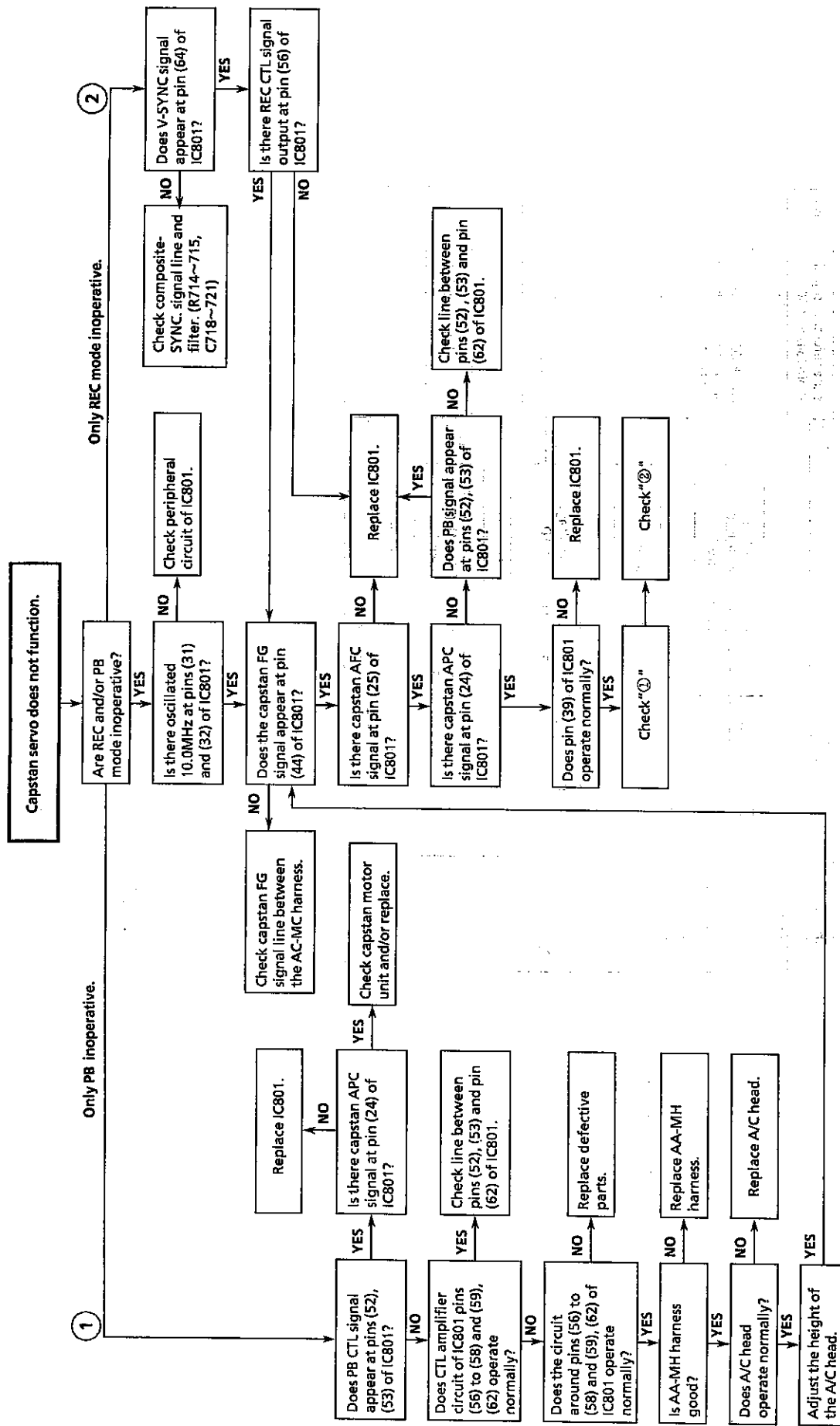
FLOW CHART NO. 15 HEAD SWITCHING PULSE TROUBLESHOOTING



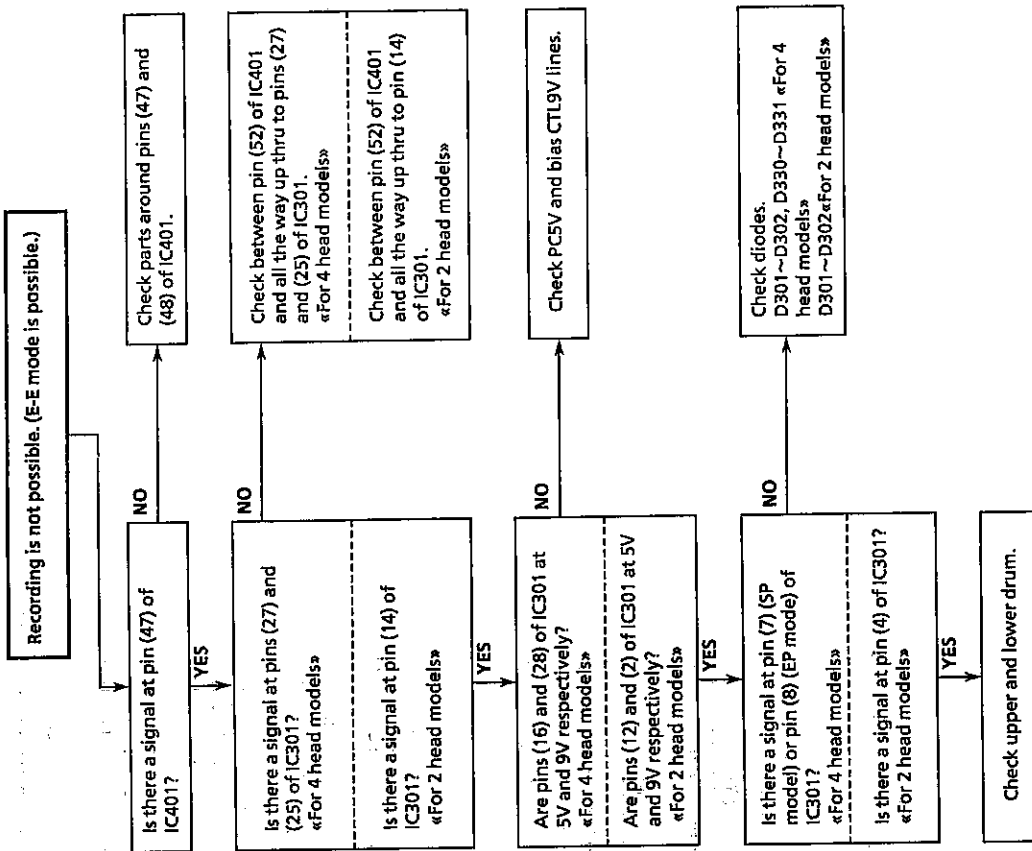
FLOW CHART NO. 16 DRUM SERVO TROUBLESHOOTING



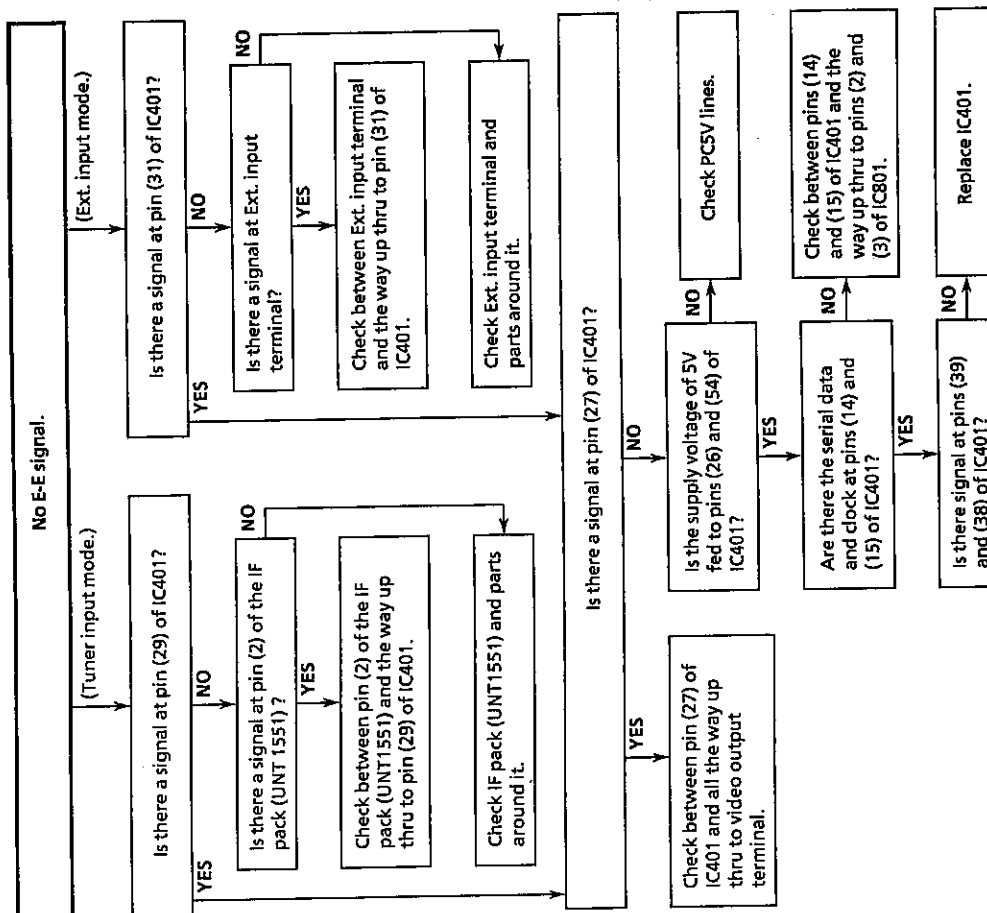
FLOW CHART NO.17 CAPSTAN SERVO TROUBLESHOOTING



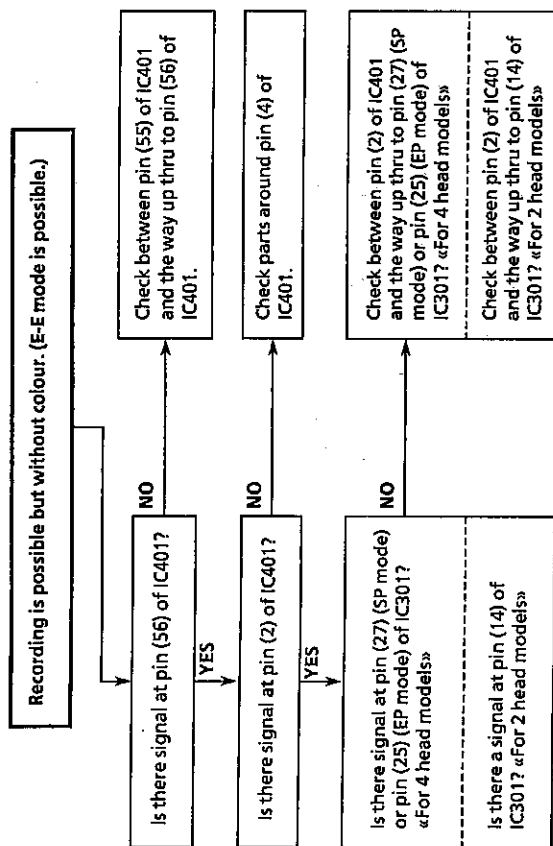
FLOW CHART NO.19 RECORDING MODE (LUMINANCE) TROUBLESHOOTING



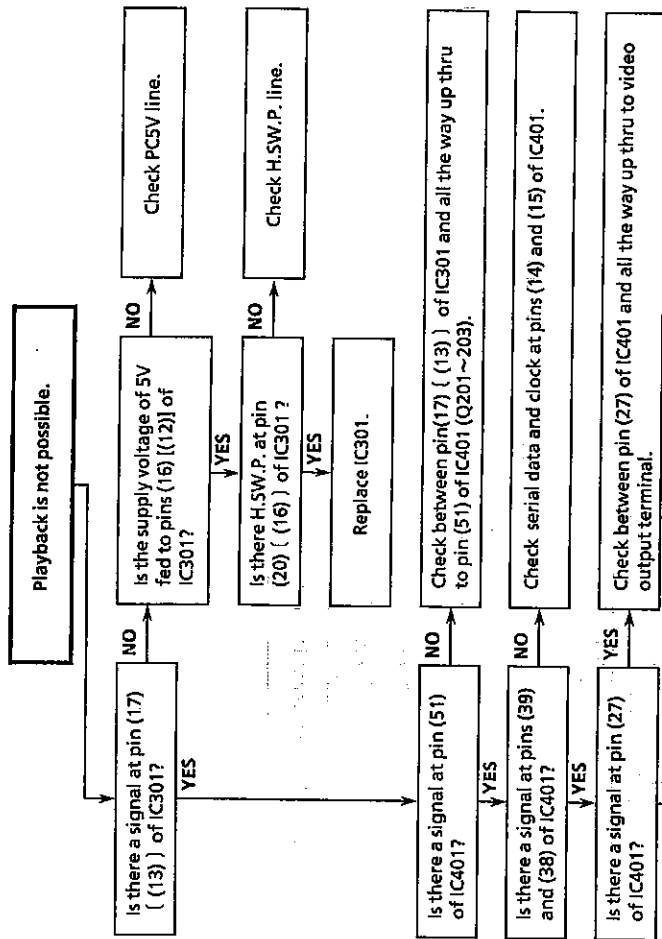
FLOW CHART NO.18 E-E MODE TROUBLESHOOTING



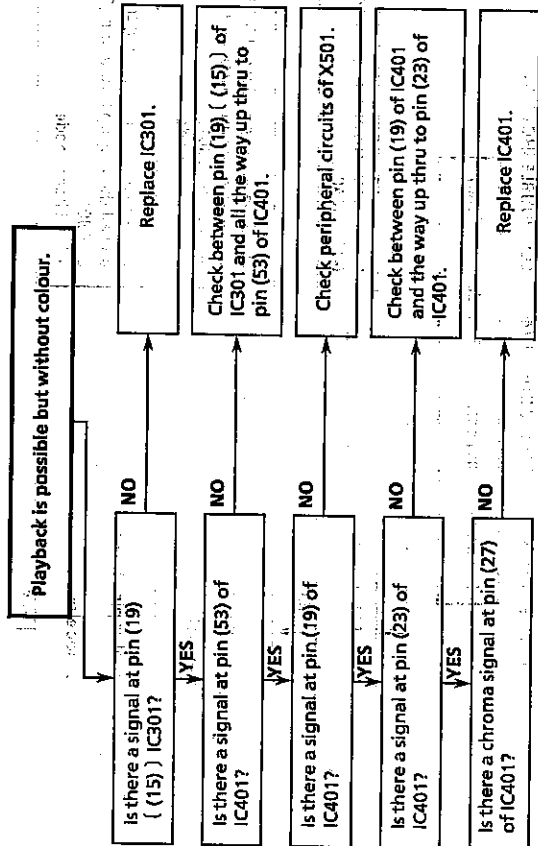
FLOW CHART NO.20 RECORDING MODE (CHROMA) TROUBLESHOOTING



FLOW CHART NO.21 PLAYBACK MODE (LUMINANCE) TROUBLESHOOTING

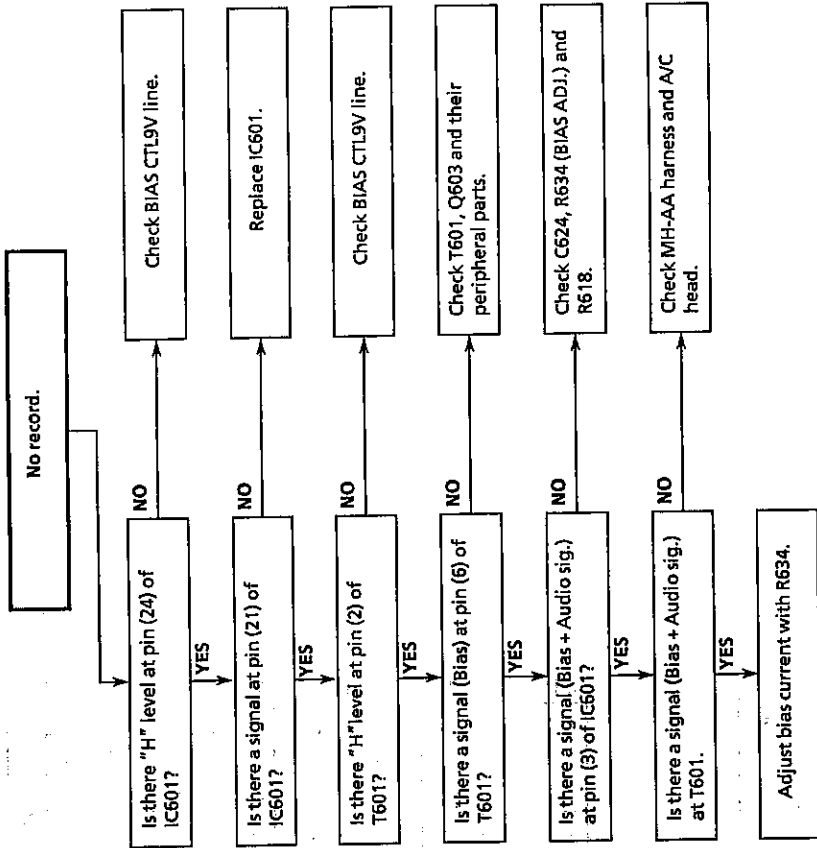


FLOW CHART NO.22 PLAYBACK MODE (CHROMA) TROUBLESHOOTING

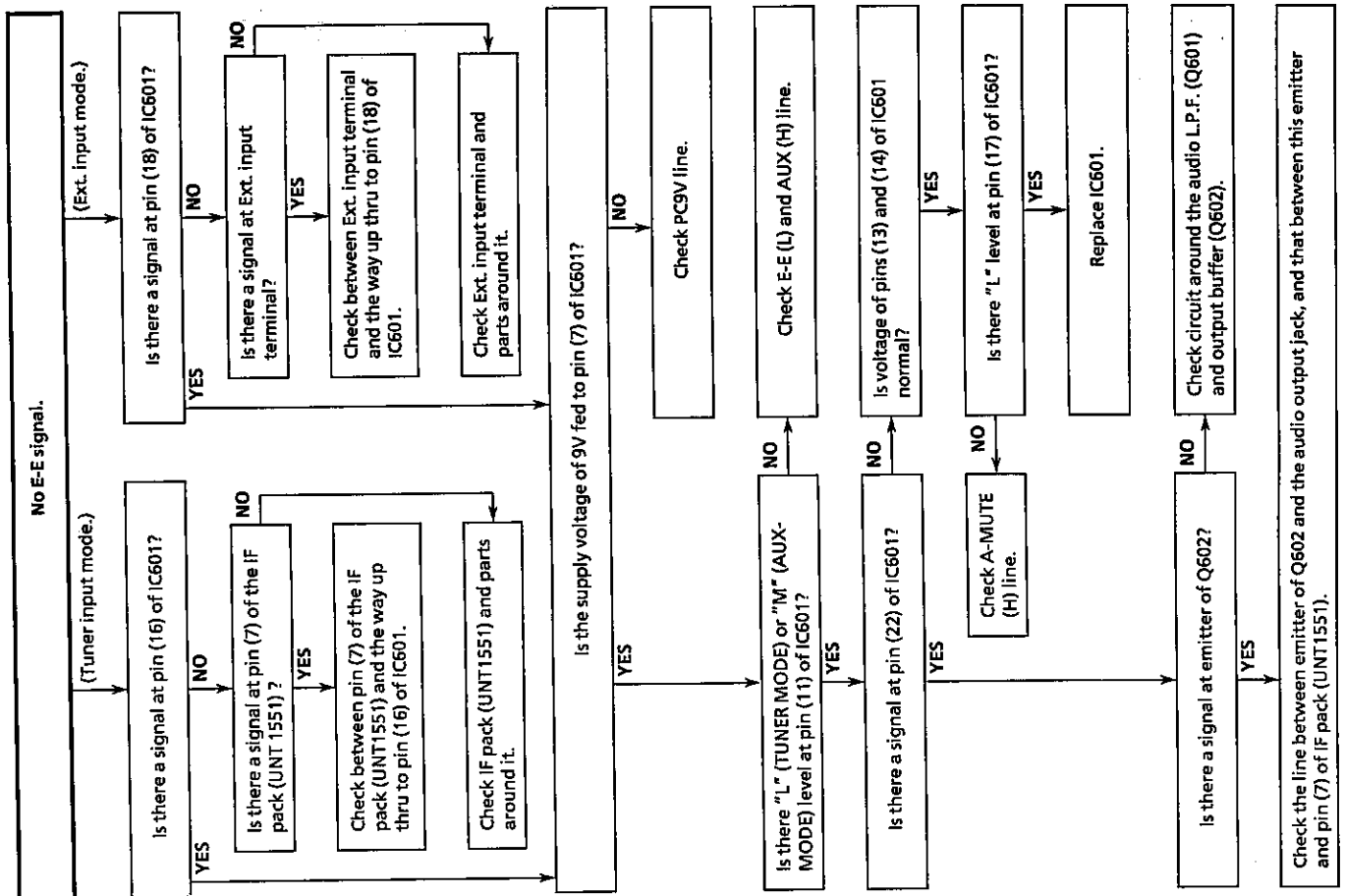


Note: Words shown in the bracket " () " are for the 2 head models only.

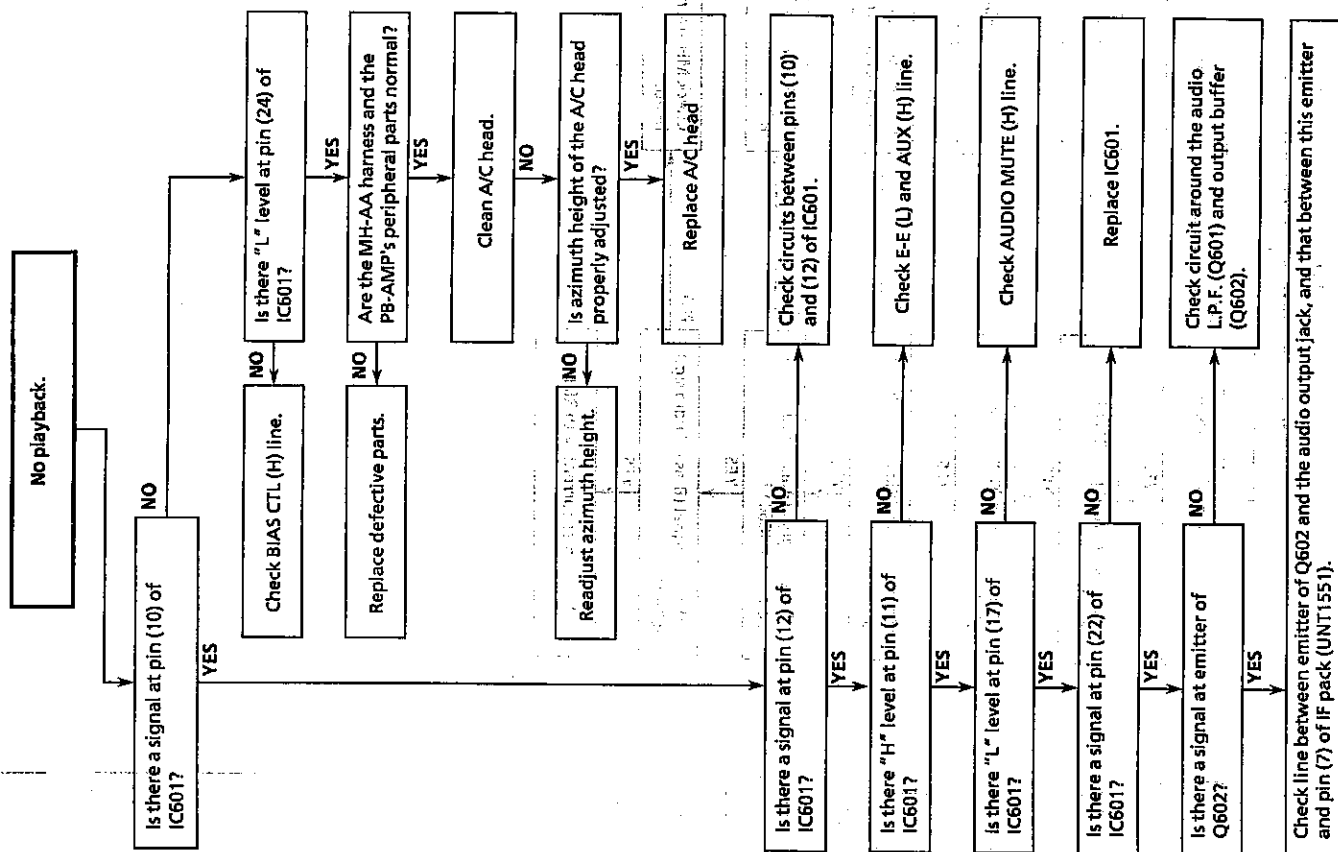
FLOW CHART NO.24 LINEAR SOUND RECORDING MODE TROUBLESHOOTING



FLOW CHART NO.23 LINEAR SOUND E-E MODE TROUBLESHOOTING



FLOW CHART NO.25 LINEAR SOUND PLAYBACK MODE TROUBLESHOOTING



REPLACEMENT OF IC804 (E²PROM)

« Servicing precautions »

When the IC804 (E²PROM) has been replaced, make the following reprogramming.
Depending on models, the IC804 (E²PROM) has been factory adjusted for it's memory function.
It's therefore necessary to reprogram the memory function for the model in question.
Note that the servo circuit requires readjustments for the slow and still modes.

Memory function reprogramming.

1. Check the power off. (Power is standby mode)
2. Make for a moment short circuited jumper pins 33 and 34 on the main PWB.
Be sure that all the fluorescent display tubes light up into the TEST mode.
3. Using the CHANNEL (+) and (–) buttons, select the right function numbers from among JP0-JP31, which appear in the fluorescent display tube, referring to the E²PROM map.
Press the DISPLAY button to pick up the functions (ON) and the CLEAR button to discard the functions (OFF).
* When the DISPLAY button has been pressed (ON), the memory function No. starts flashing.
* When the CLEAR button has been pressed (OFF), the memory function No. lights up.
4. Make the short circuited cathode of D5001 and jumper pin 391 on the main PWB, and the settings will be displayed in hexadecimal notation.
Now you can see if the settings are correct.

Example: "ON" and "OFF" are taken as "1" and "0" respectively. The numbers JP0 to JP31 are divided into eight groups and each group's setting is displayed in hexadecimal notation.

J31	J30	J29	J28	J27	J26	J25	J24	J23	J22	J21	J20	J19	J18	J17	J16
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		↓				↓			↓				↓		
		SPACE				0			0				0		
J15	J14	J13	J12	J11	J10	J9	J8	J7	J6	J5	J4	J3	J2	J1	J0
0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1
		↓			↓				↓				↓		
		0			4				0				D		

"000040D" appears in the fluorescent display tube.

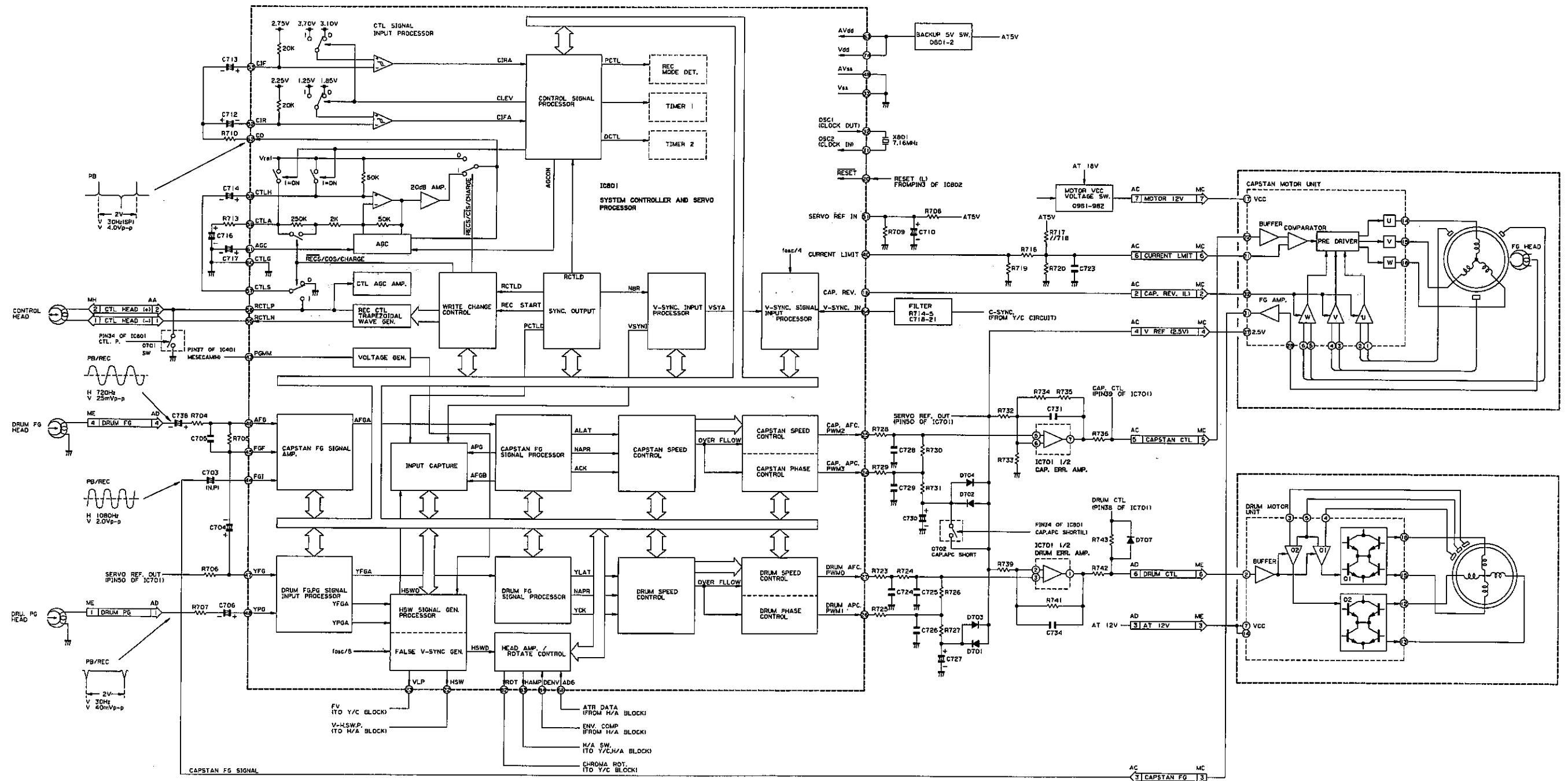
5. Finally make for moment short circuited jumper pins 33 and 34 on the main PWB to clear the TEST mode or press the operate button to turn the power on.

	A39GM	A39SM A239SM	A239GM	A39HM	A39LM	A50HM	A50LM	A49GM	A62GM	A62SM	A462GM	A462SM	A72GM	A72HM	A72LM
JP31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
DISPLAY	000040D	0000001	000000D	1004120	1004000	10343A0	1034680	002048D	200540D	2005001	200400D	2004001	2025C8D	2035BA8	2035E80

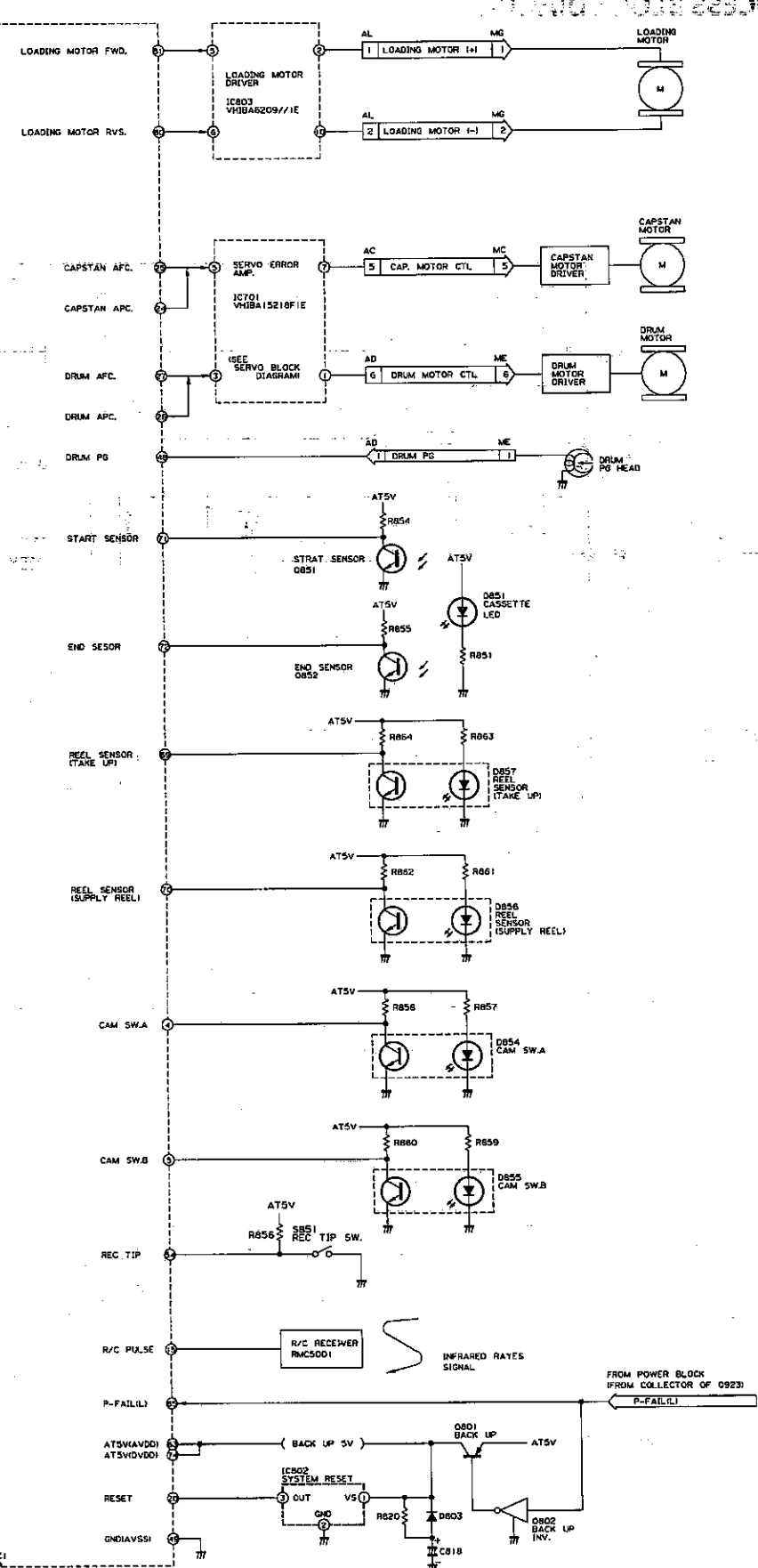
(Note: "1" : flashing "0" : lights up)

VC-A462GM
VC-A462SM
VC-A462GM
VC-A462SM
VC-A462GM
VC-A462SM
VC-A462GM
VC-A462SM
VC-A462GM
VC-A462SM
VC-A462GM
VC-A462SM
VC-A462GM
VC-A462SM
VC-A462GM
VC-A462SM

8. BLOCK DIAGRAM SERVO PROCESS BLOCK DIAGRAM



MEMPHIS, TENN.



SIGNAL FLOW BLOCK DIAGRAM

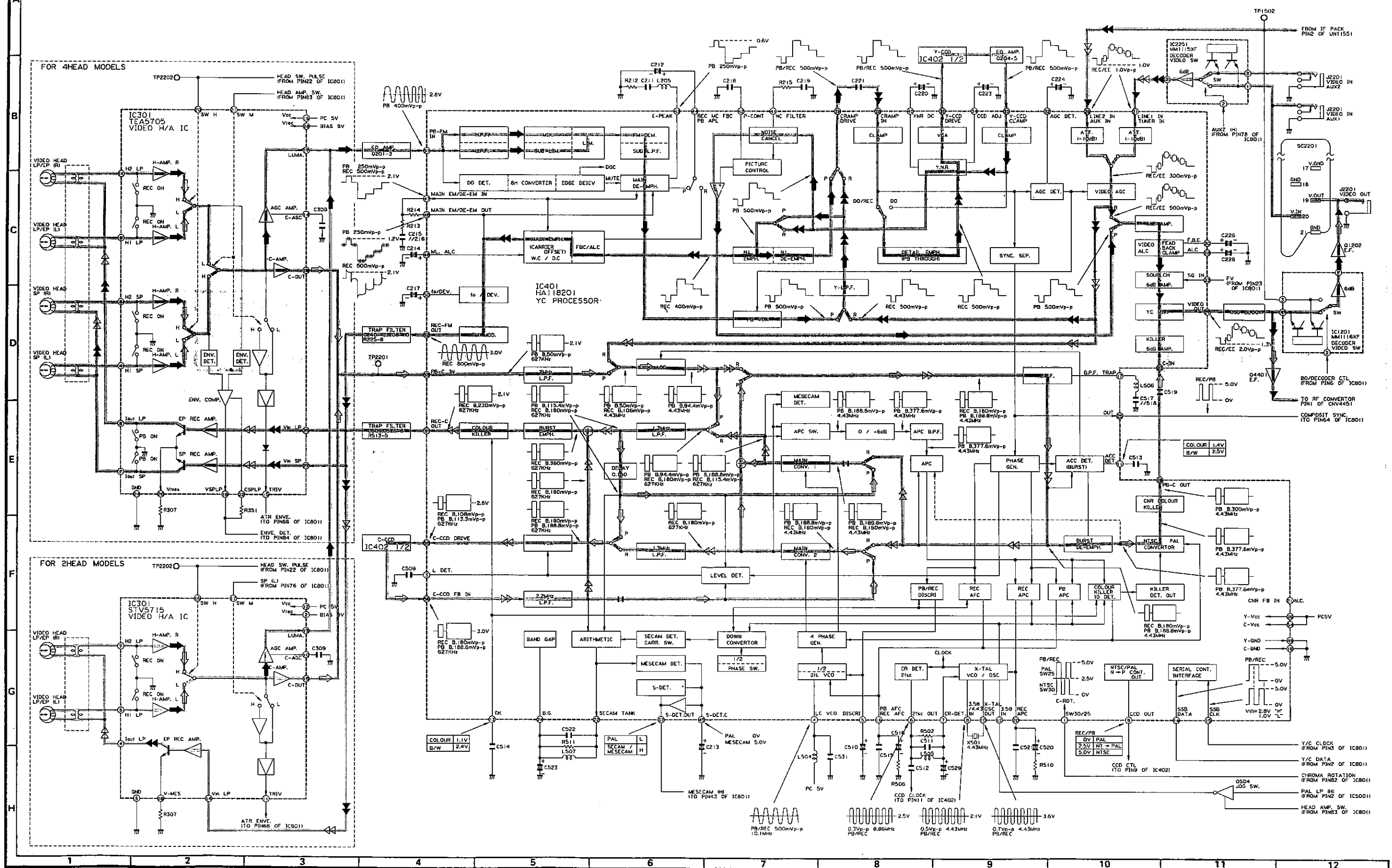
⇒ Playback Chrominance Signal

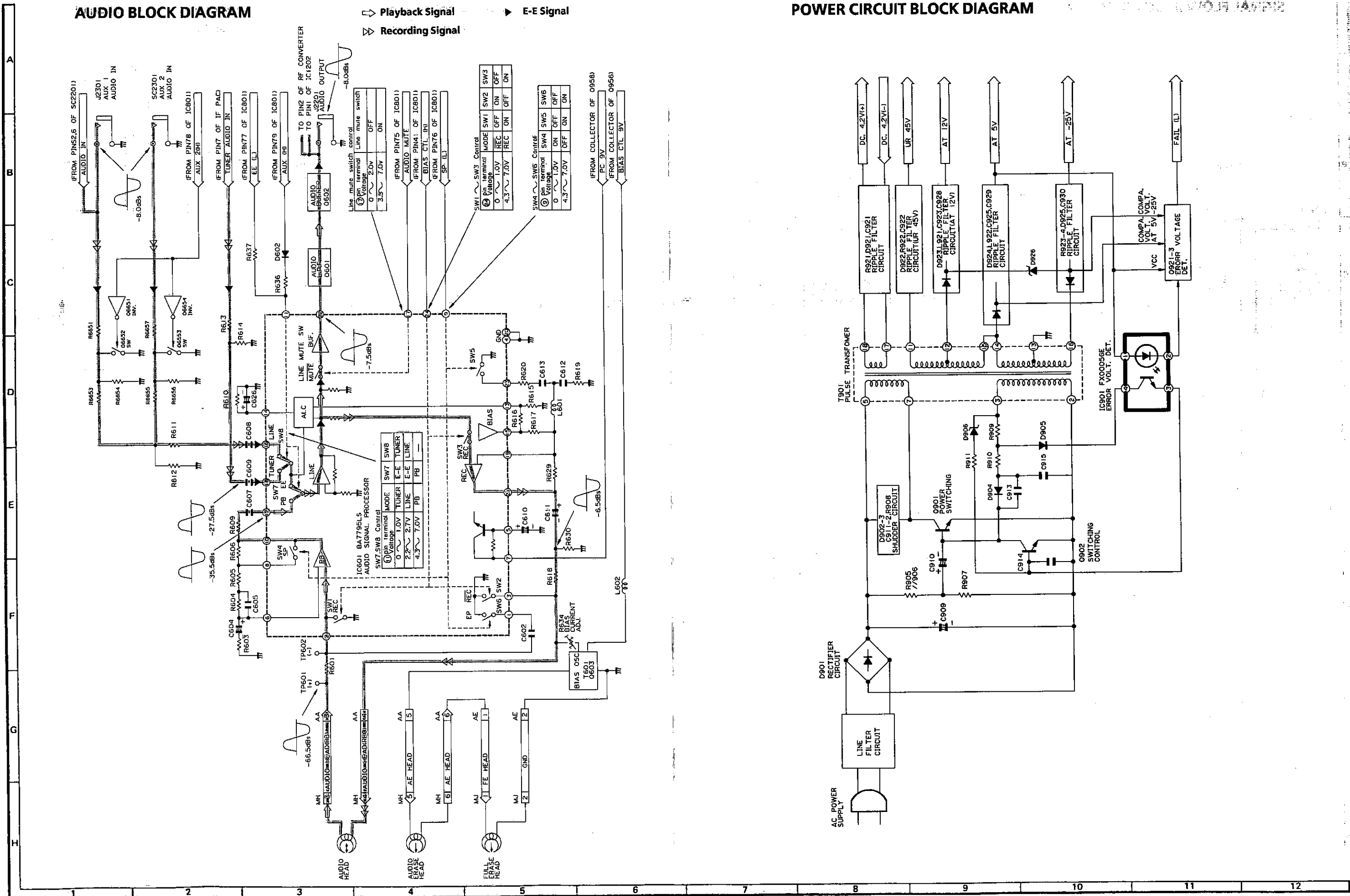
⇒ Recording Chrominance Signal

⇒ E-E Signal

⇒ Playback Luminance Signal

⇒ Recording Luminance Signal





MEMO

SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:
BE SURE TO USE GENUINE PARTS FOR SECURING THE SAFETY AND RELIABILITY OF THE SET. PARTS MARKED WITH "Δ" AND PARTS SHADED (IN BLACK) ARE ESPECIALLY IMPORTANT FOR MAINTAINING THE SAFETY AND PROTECTING ABILITY OF THE SET.
BE SURE TO REPLACE THEM WITH PARTS OF SPECIFIED PART NUMBER.

SAFETY NOTES:
1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.
2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.

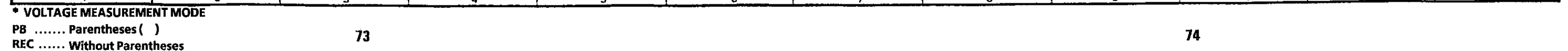
NOTES:
1. The unit of resistance "ohm" is omitted ($k = 1000 \text{ ohm}$, $M = 1 \text{ Meg ohm}$).
2. All resistors are $1/8$ watt, unless otherwise noted.
3. The unit of capacitance "F" is omitted ($\mu = \mu F$, $p = p\mu F$).
4. The values in parentheses are the ones in the PB mode; the values without parentheses are the ones in the REC mode.

VOLTAGE MEASUREMENT CONDITIONS:
1. DC voltages are measured between points indicated and chassis ground by VTVM, with AC230V, 50Hz supplied to unit and all controls are set to normal viewing picture unless otherwise noted.
2. Voltages are measured with $10000\mu V$ B & W or colour signal.

WAVEFORM MEASUREMENT CONDITIONS:
 $10000\mu V$ 87.5 percent modulated colour bar signal is fed into tuner.

CAUTION:
This circuit diagram is original one. Therefore there may be a slight difference from yours.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26



COMPONENTS

1,2: FOR MA30B,5A MA40B,5A MA42B,5A
MA20B MA72B VR-135
A390MBK1,5M A2390M,5M
A620MBK1,5M A620M,5M
A490M
A72GM

18: 4-HEAD ONLY FOR
A620MBK1,5M A620M,5M
A72GM A472GM TVR954 DVR954
MA40B,5A MA42B,5A M472B

RESISTORS

34	R612	R613	R614
0454	10K	47K	6.8K
80	4.7K	47K	5.6K
242	5A		
A72GM	6.8K	00	
A72GM	4.7K	00	

ICs

35,36	IC402	C535
MA30B,5A VR-135	MSMT461R	390P
MA40B,5A	MSMT461R	390P
MA42B,5A	MSMT461R	390P
OTHER MODELS	MSMT461R	180P

RESISTORS

27, 29	R501	R208	R208	R212	C243	C211	R517
210	1.8K	1.8K	560	1.5K	47P	39P	2.2K
440	1K	1.5K	470	1.5K	33P	56P	1.5K
210+LP	1.8K	1.8K	560	2.2K	33P	47P	2.2K

RESISTORS

210, 211	C206	R211
210	56P	220
440	47P	180
210+LP	56P	220

RESISTORS

213 (IC401)	R511
MA30B,5A VR-135	1.8K
MA40B,5A	1.8K
MA42B,5A	1.8K
OTHER MODELS	1.8K

TEST POINTS

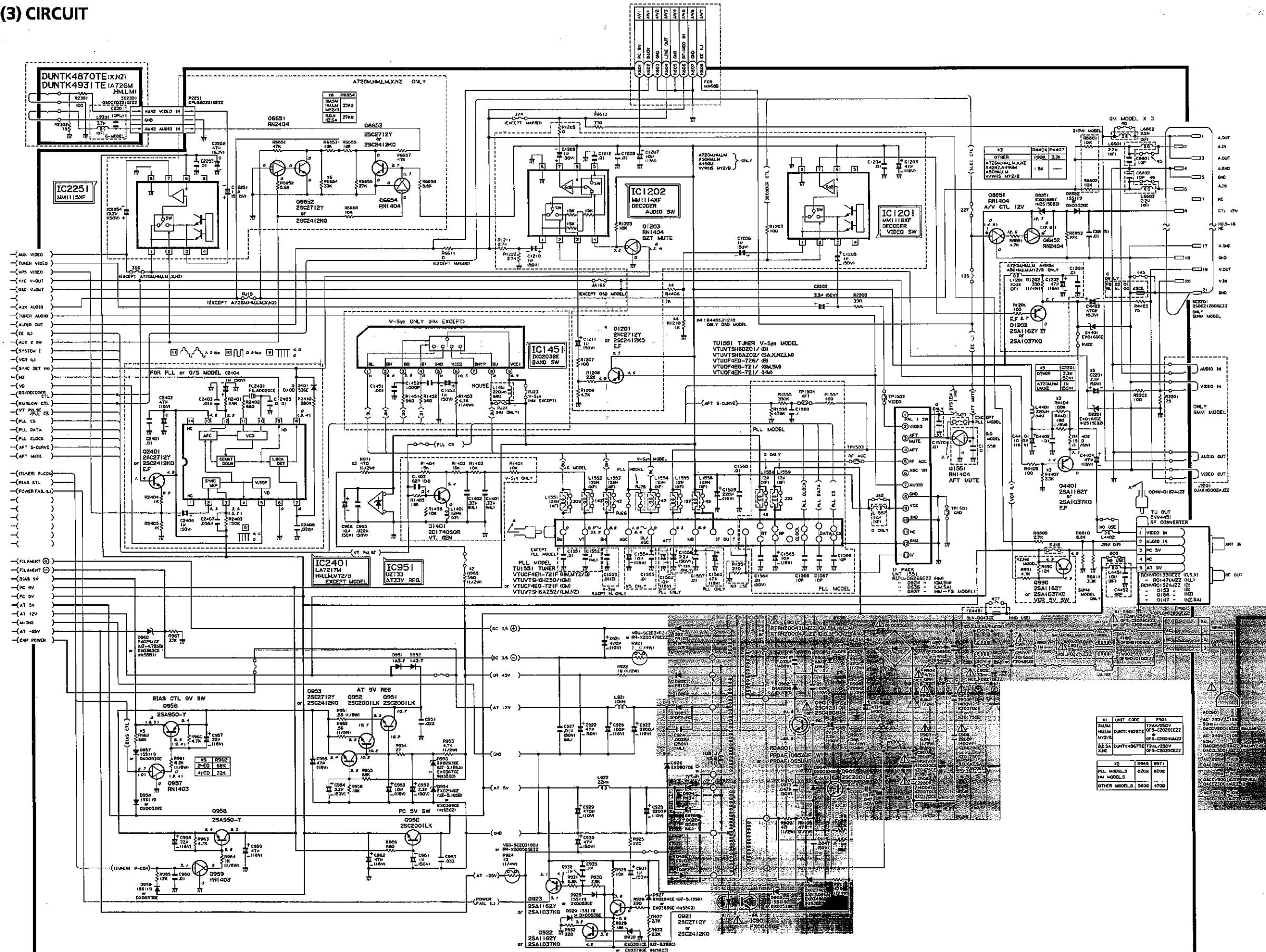
(AUX VIDEO)
(TUNER VIDEO)
(VPS VIDEO)
(V-C V-OUT)
(V-C V-OUT)
(AUX AUDIO)
(TUNER AUDIO)
(AUX OUT)
(EE 1)
(AUX 2 IN)
(SYSTEM 1 MRE)
(VCR 1)
(SYSTEM DET IN)
(V)
(BO/DECO IN)
(BI/SLW CTL)
(PL PULSE)
(PL CLOCK)
(AFT S-CURVE)
(AFT MUTE)
(TUNER PCON)
(BIAS CTL)
(POWER FAIL 1)
(HIGH SPD CTL)
(FILAMENT)
(FILAMENT)
(PC BV)
(PC BV)
(AT 5V)
(AT 12V)
(M-GND)
(AT -25V)
(CAP POWER)

PB Parentheses ()
REC Without Parentheses

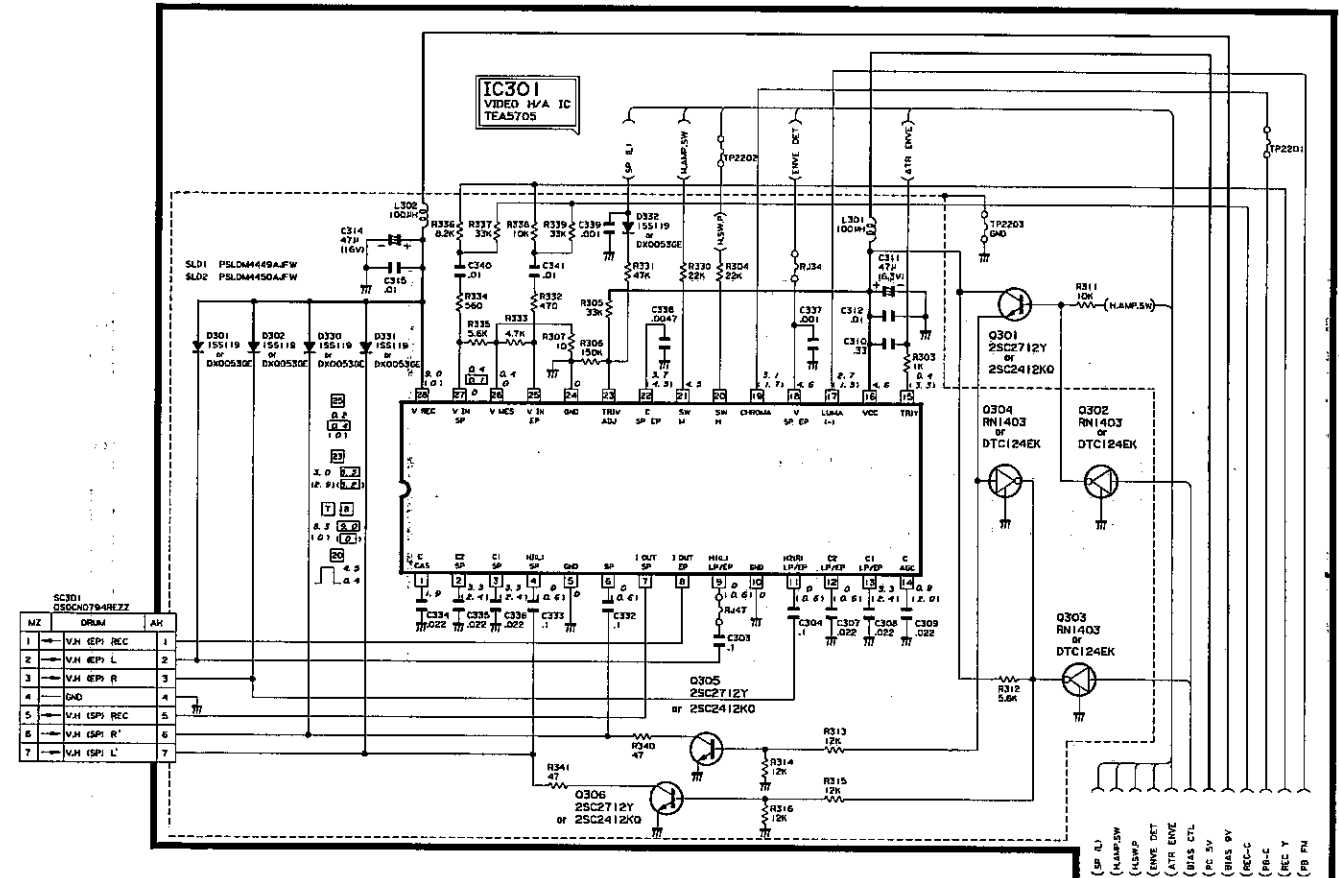
MAIN (3) CIRCUIT

VC-A462GM
VC-A462SM

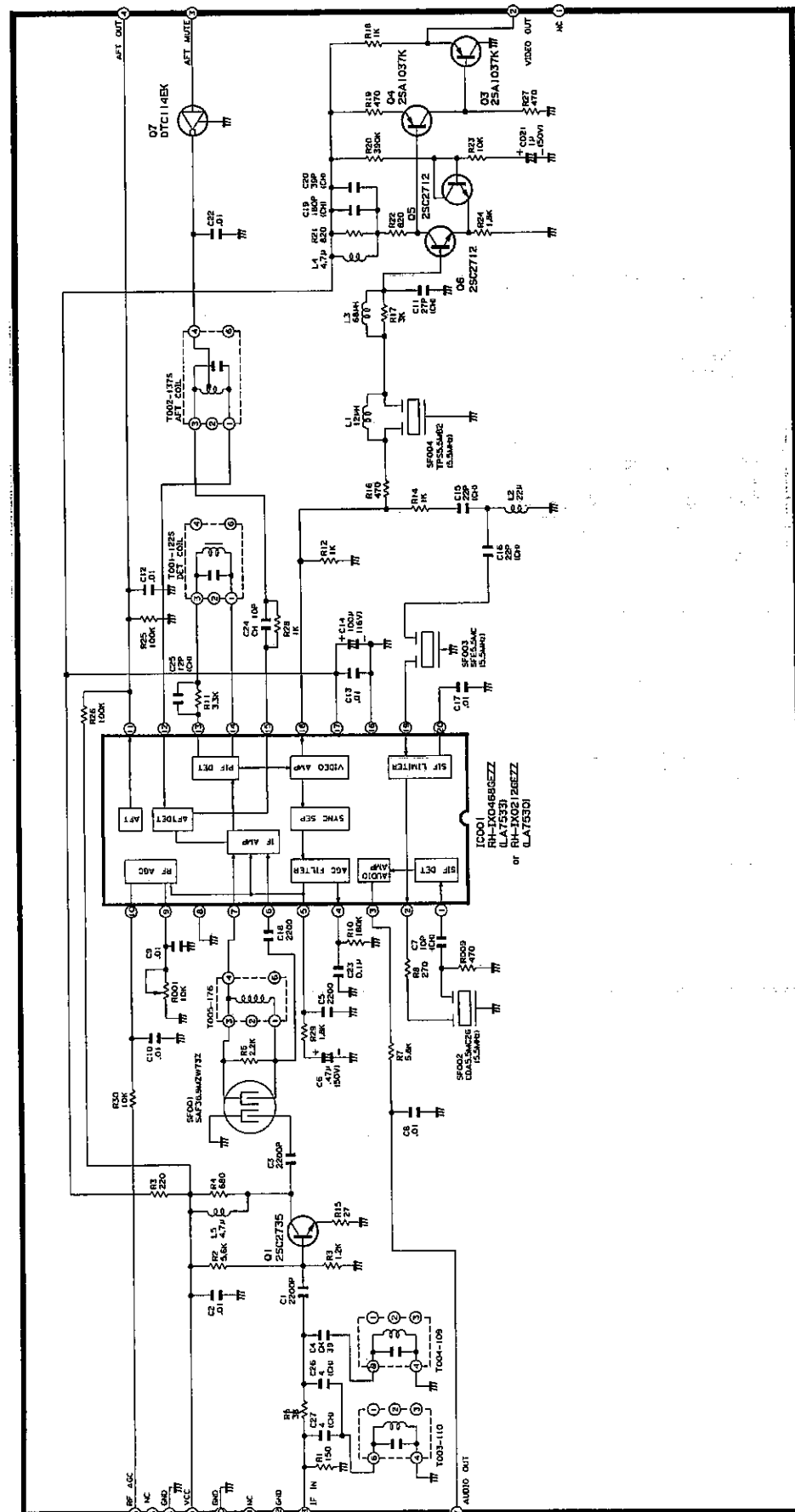
VC-A462GM
VC-A462SM



A
B
C
D
E
F
G
H

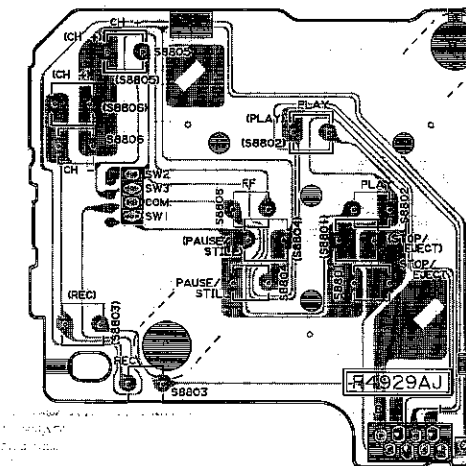


RIFU-0624GEZZ

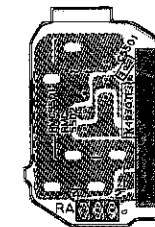


PWB FOIL PATTERN

RESEARCH DESIGN



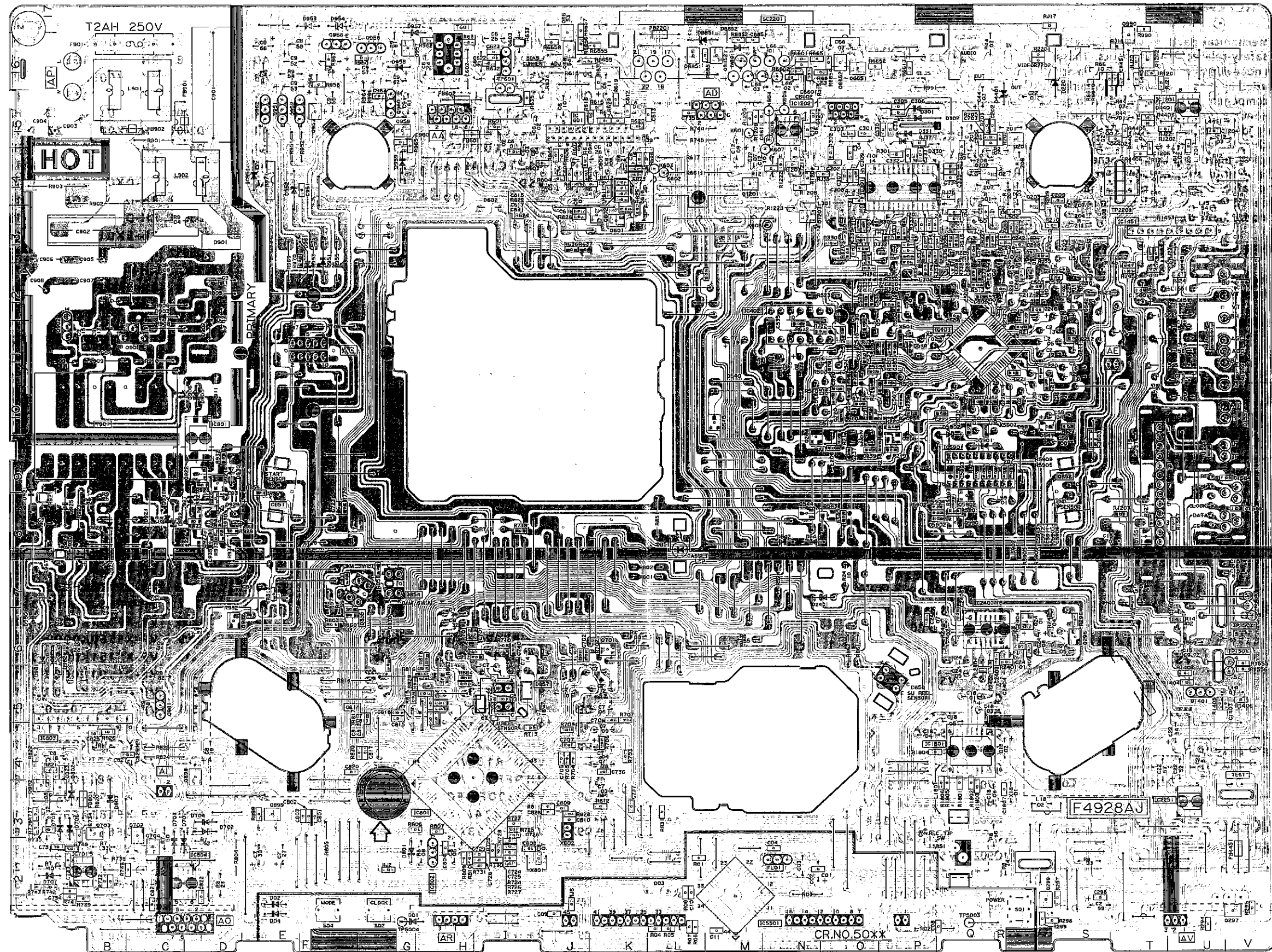
OPERATION PWB



R/C RECEIVER PWB

VC-A462GM
VC-A462SM

VC-A462GM
VC-A462SM



10. REPLACEMENT PARTS LIST PARTS REPLACEMENT

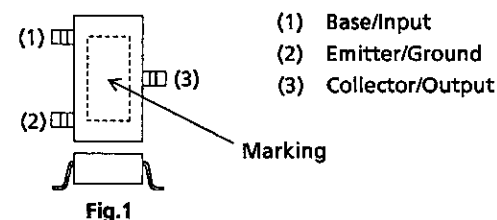
Many electrical and mechanical parts in video cassette recorder have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by Δ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

- | | |
|-----------------|----------------|
| 1. MODEL NUMBER | 2. REF. NO. |
| 3. PART NO. | 4. DESCRIPTION |
| 5. PRICE CODE | |

HOW TO IDENTIFY CHIP TRANSISTORS AND DIODES BY ITS MARKING



Package	Marking	Parts No.
Fig. 1	15	VSDTA124EK/-1
Fig. 1	25	VSDTC124EK/-1
Fig. 1	24	VSDTC114EK/-1
Fig. 1	26	VSDTC144EK/-1
Fig. 1	16	VSDTA144EK/-1
Fig. 1	BQ	VS2SC2412KQ-1

MARK *: SPARE PARTS-DELIVERY SECTION.

PRINTED WIRING BOARD ASSEMBLIES (NOT REPLACEMENT ITEM)

DUNTK4928TEV6	-	Main Unit (VC-A462GM)	—
DUNTK4928TEV8	-	Main Unit (VC-A462SM)	—
DUNTK4929TEV2	-	Operation Unit	—
DUNTK4930TEV1	-	R/C Receiver Unit	—

VC-A462GM
VC-A462SM

Ref. No. Part No. * Description Code

DUNTK4928TEV6 (VC-A462GM) DUNTK4928TEV8 (VC-A462SM) MAIN UNIT ASSEMBLY

TUNER AND ASSEMBLY

CNV4451	RCNVR0133GEZZ	J	RF Converter	AZ
TU1551	VTUOF4EG-721/	U	VHF Tuner	BD
UNT1551	RIFU-0624GEZZ	J	IF-Pack	BB

INTEGRATED CIRCUITS

IC301	VH1EA5705/-1	J	Video H/A	AL
IC401	VH1HA8201F/-1	J	Y/C Processor	AW
IC402	VH1MSM7463R-1	J	CCD	AM
IC601	VH1BA7795LS-1	J	Audio Processor	AG
IC701	VH1BA15218F1E	J		AF
IC801	RH-IX0867GEZZ	J	Syscon/Servo/Timer	BE
IC802	VH1S806HZ/-1	J	Reset	AC
IC803	VH1BA6209//1E	J	Loading Motor Driver	AG
IC804	VH1LE93C46T-1	J	E ² PROM	AF
IC951	VH1UZT33///-1	J	AT 33V Regulator	AC
IC1451	RH-IX0203GEZZ	J	Band Switch	AE
IC1801	VH1MV1821MP-1	U	VPS/PDC Decoder (VC-A462GM)	AW

IC2401	VH1LA7217M/-1	J		AG
IC5001	VH1MN12510F-1	J	FLP Driver	AM

TRANSISTORS

Q201	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q202	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q203	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q204	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q205	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q540	VSDTC124EK/-1	J	DTC124EK	AB
Q541	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q542	VSDTA124EK/-1	J	DTA124EK	AB
Q543	VSDTC124EK/-1	J	DTC124EK	AB
Q544	VSDTC124EK/-1	J	DTC124EK	AB
Q601	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q602	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q603	VS2C3939SQR1E	J	2SC3939SQR	AC
Q702	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q703	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q801	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q802	VSDTC114EK/-1	J	DTC114EK	AA
Δ Q901	VS2SC4231QR-3	J	2SC4231QR	AH
Δ Q902	VS2SC2001LK-1	J	2SC2001LK	AA
Q921	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q922	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q923	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q951	VS2SC2001LK-1	J	2SC2001LK	AA
Q952	VS2SC2001LK-1	J	2SC2001LK	AA
Q953	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q956	VS2SA950-Y/1E	J	2SA950	AD

VC-A462GM
VC-A462SM

Ref. No. Part No. * Description Code

TRANSISTOR (Continued)

Q957	VSDTC124EK/-1	J	DTC124EK	AB
Q958	VS2SA950-Y/1E	J	2SA950	AD
Q959	VSDTC124EK/-1	J	DTC124EK	AB
Q960	VS2SC2001LK-1	J	2SC2001LK	AA
Q1401	VS2C1740SQR1E	J	2SC1740SQR	AC
Q2401	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q4401	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q8851	VSDTC144EK/-1	J	DTC144EK	AB
Q8852	VSDTA144EK/-1	J	DTA144EK	AC

DIODES

D301	RH-DX0053GEZZ	J	1SS132	AA
D302	RH-DX0053GEZZ	J	1SS132	AA
D330	RH-DX0053GEZZ	J	1SS132	AA
D331	RH-DX0053GEZZ	J	1SS132	AA
D332	RH-DX0053GEZZ	J	1SS132	AA
D540	RH-DX0053GEZZ	J	1SS132	AA
D541	RH-DX0053GEZZ	J	1SS132	AA
D542	RH-DX0053GEZZ	J	1SS132	AA
D602	RH-DX0053GEZZ	J	1SS132	AA
D701	RH-DX0053GEZZ	J	1SS132	AA
D702	RH-DX0053GEZZ	J	1SS132	AA
D703	RH-DX0053GEZZ	J	1SS132	AA
D704	RH-DX0053GEZZ	J	1SS132	AA
D705	RH-DX0053GEZZ	J	1SS132	AA
D706	RH-DX0053GEZZ	J	1SS132	AA
D707	RH-DX0053GEZZ	J	1SS132	AA
D801	RH-DX0053GEZZ	J	1SS132	AA
D802	RH-DX0053GEZZ	J	1SS132	AA
D851	RH-PX0234GEZZ	J	Photo Diode	AD
D854	RH-PX0231GEZZ	J	GP1S24	AF
D855	RH-PX0231GEZZ	J	GP1S24	AF
D856	RH-PX0232GEZZ	J	Photo Diode	AF
D857	RH-PX0232GEZZ	J	Photo Diode	AF
Δ D901	RH-DX0083GEZZ	J	Diode	AC
Δ D902	VHDERA2206/-1	J	ERA2206	AC
Δ D903	RH-DX0220CEZZ	J	Diode	AB
Δ D904	RH-DX0052GEZZ	J	Diode	AB
Δ D905	RH-DX0053GEZZ	J	1SS132	AA
Δ D906	RH-EX0279CEZZ	J	UZ3.0BSA	AA
Δ D921	VHDFR103///-1	J	FR103	AC
Δ D922	VHDFR103///-1	J	FR103AC	AC
Δ D923	VHD30DF2-FC-1	J	30DF2-FC	AD
Δ D924	VHDK34///-1	J	RK34	AE
Δ D925	VHDFR103///-1	J	FR103	AC
D926	RH-EX0807GEZZ	J	Zener Diode	AC
D927	RH-EX0294CEZZ	J	UZ-5.1BSB	AA
D928	RH-DX0053GEZZ	J	1SS132	AA
D929	RH-DX0053GEZZ	J	1SS132	AA
D930	RH-EX0301CEZZ	J	UZ-6.2BSC	AA
D951	VHD1A3-F///-1	J	1A3-F	AA
D952	VHD1A3-F///-1	J	1A3-F	AA
D953	RH-EX0293CEZZ	J	UZ-5.1BSA	AA
D954	RH-EX0294CEZZ	J	UZ-5.1BSB	AA

DIODES (Continued)

D957	RH-DX0053GEZZ	J	1SS132	AA
D958	RH-DX0053GEZZ	J	1SS132	AA
D959	RH-DX0053GEZZ	J	1SS132	AA
D960	RH-EX0291CEZZ	J	Zener Diode	AA
D2201	RH-EX0168GEZZ	J	HZS15EB2	AA
D2401	RH-DX0053GEZZ	J	1SS132	AA
D4401	RH-EX0168GEZZ	J	HZS15EB2	AA
D5001	RH-DX0053GEZZ	J	1SS132	AA
D5002	RH-DX0053GEZZ	J	1SS132	AA
D5003	RH-DX0053GEZZ	J	1SS132	AA
D5004	RH-DX0053GEZZ	J	1SS132	AA
D8851	RH-EX0168GEZZ	J	1SS132	AA
D8852	RH-DX0053GEZZ	J	1SS132	AA
Δ IC901	RH-FX0005GEZZ	J	1SS132	AE
Q851	RH-PX0233GEZZ	J	Photo Diode	AD
Q852	RH-PX0233GEZZ	J	Photo Diode	AD

PACKAGED CIRCUITS

X501	RCRSB0166GEZZ	J	Crystal, 4.43MHz	AF
X801	RCRSB0190GEZZ	J	Crystal, 10MHz	AM
X1801	RCRSB0173GEZZ	J	Crystal (GM only)	AG

COILS AND TRANSFORMERS

FL2401	RFILA0020CEZZ	J		AD
FL5001	RFILC0115GEZZ	J		AC
L201	VP-XF151K0000	J	150 μ H	AB
L202	VP-XF150K0000	J	15 μ H	AB
L203	VP-XF330K0000	J	33 μ H	AB
L204	VP-XF120K0000	J	12 μ H	AB
L205	VP-XF820K0000	J	82 μ H	AB
L206	VP-DF1R2M0000	J	1.2 μ H	AB
L207	VP-XF560K0000	J	56 μ H	AB
L208	VP-XF151K0000	J	150 μ H	AB
L209	VP-XF560K0000	J	56 μ H	AB
L210	VP-XF151K0000	J	150 μ H	AB
L301	VP-DF101K0000	J	100 μ H	AB
L302	VP-DF101K0000	J	100 μ H	AB
L501	VP-MK561K0000	J	560 μ H	AB
L504	VP-XF150J0000	J	15 μ H	AB
L505	VP-XF100K0000	J	10 μ H	AB
L506	VP-XF390J0000	J	39 μ H	AB
L507	VP-YF682J0000	J	6.8mH	AC
L509	VP-XF151K0000	J	150 μ H	AB
L510	VP-XF181K0000	J	180 μ H	AB
L511	VP-DF680K0000	J	68 μ H	AB
L601	VP-YF822J0000	J	8.2mH	AC
L602	VP-DF221K0000	J	220 μ H	AB
Δ L901	RCILF0227GEZZ	U	33mH	AM
Δ L902	RCILF0227GEZZ	J	33mH	AM
L921	RCILP0171CEZZ	J	10 μ H	AD
L922	RCILP0175CEZZ	J	22 μ H	AD
L1401	VP-XF120K0000	J	12 μ H	AB
L1551	VP-XF120K0000	J	12 μ H (GM only)	AB
L1552	VP-XF120K0000	J	12 μ H (GM only)	AB

Ref. No.	Part No.	★	Description	Code
COILS AND TRANSFORMERS (Continued)				
L1553	VP-XF120K0000	J	12μH (GM only)	AB
L1554	VP-XF120K0000	J	12μH (GM only)	AB
L1555	VP-XF120K0000	J	12μH (GM only)	AB
L1556	VP-XF120K0000	J	12μH (GM only)	AB
L1557	VP-XF120K0000	J	12μH (GM only)	AB
L1558	VP-XF120K0000	J	12μH (GM only)	AB
L1559	VP-XF120K0000	J	12μH (GM only)	AB
L1801	VP-XF8R2K0000	J	8.2μH (GM only)	AB
L1802	VP-ZK4R7K0000	J	4.7μH (GM only)	AB
L4401	VP-MK221K0000	J	220μH	AB
L6601	VP-XF2R2K0000	J	2.2μH (GM only)	AB
L6602	VP-XF2R2K0000	J	2.2μH (GM only)	AB
L6603	VP-XF2R2K0000	J	2.2μH (GM only)	AB
T601	RTRNH0053GEZZ	J	Osc. Transformer	AE
△T901	RTRNZ0043UMZZ	U	Transformer	AR

CONTROL

R634	RVR-M4421GEZZ	J	100(B) Bias Current	AB
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CAPACITORS

C201	VCKYD41HB681K	J	680p 50V Ceramic	AA
C202	VCKYCY1HB391K	J	390p 50V Ceramic	AA
C203	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C204	VCCSD41HL150J	J	15p 50V Ceramic	AA
C205	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C206	VCCCCY1HH560J	J	56P 50V Ceramic	AA
C208	VCCCPA1HH560J	J	56p 50V Ceramic	AA
C209	VCKYCY1CF334Z	J	0.33 16V Ceramic	AA
C210	VCKYD41CY103N	J	0.01 16V Ceramic	AA
C211	VCCCPA1HH390J	J	39p 50V Ceramic	AA
C212	VCEAEA1HW474M	J	0.47 50V Electrolytic	AB
C213	VCKYPA1HF473Z	J	0.047 50V Ceramic	AA
C214	VCEAEA1HW224M	J	0.22 50V Electrolytic	AB
C215	VCCCPA1HH101J	J	100p 50V Ceramic	AA
C216	VCCCCY1HH100D	J	10p 50V Ceramic	AA
C217	VCEAEA1HW105M	J	1 50V Electrolytic	AB
C218	VCKYD41CY103N	J	0.01 16V Ceramic	AA
C219	VCKYCY1EB223K	J	0.022 25V Ceramic	AA
C220	VCEAEA1HW355M	J	3.3 50V Electrolytic	AB
C221	VCKYCY1EB223K	J	0.022 25V Ceramic	AA
C222	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C223	VCEAEA1HW355M	J	3.3 50V Electrolytic	AB
C224	VCEAEA1HW225M	J	2.2 50V Electrolytic	AB
C226	VCEAEA1HW474M	J	0.47 50V Electrolytic	AB
C228	VCEAEA1HW224M	J	0.22 50V Electrolytic	AB
C229	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C230	VCEAEA0JW476M	J	47 6.3V Electrolytic	AB
C233	VCEAEA1HW105M	J	1 50V Electrolytic	AB
C234	VCKYCY1HF473Z	J	0.047 50V Ceramic	AA
C235	VCEAEA0JW476M	J	47 6.3V Electrolytic	AB
C236	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C237	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C238	VCCCD41HH4R7K	J	4.7p 50V Ceramic	AA

Ref. No.	Part No.	★	Description	Code
CAPACITORS (Continued)				
C239	VCCCCY1HH560J	J	56P 50V Ceramic	AA
C240	VCKYCY1HB391K	J	390p 50V Ceramic	AA
C242	VCCCCY1HH560J	J	56P 50V Ceramic	AA
C243	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C244	VCCCCY1HH221J	J	220p 50V Ceramic	AA
C301	VCKYCY1HF223Z	J	0.022 50V Ceramic	AA
C302	VCKYCY1HF223Z	J	0.022 50V Ceramic	AA
C303	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C304	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C307	VCKYCY1HF223Z	J	0.022 50V Ceramic	AA
C308	VCKYCY1HF223Z	J	0.022 50V Ceramic	AA
C309	VCKYCY1HF223Z	J	0.022 50V Ceramic	AA
C310	VCKYCY1CF334Z	J	0.33 16V Ceramic	AA
C311	VCEAGA0JW476M	J	47 6.3V Electrolytic	AB
C312	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C314	VCEAGA1CW476M	J	47 16V Electrolytic	AB
C315	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C330	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C331	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C332	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C333	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C334	VCKYCY1HF223Z	J	0.022 50V Ceramic	AA
C335	VCKYCY1HF223Z	J	0.022 50V Ceramic	AA
C336	VCKYCY1HF223Z	J	0.022 50V Ceramic	AA
C337	VCKYCY1HB102K	J	1000p50V Ceramic	AA
C338	VCKYCY1HB472K	J	4700p50V Ceramic	AA
C339	VCKYCY1HB102K	J	1000p50V Ceramic	AA
C340	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C341	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C501	VCKYCY1HB332K	J	3300p50V Ceramic	AA
C503	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C504	VCEAEA0JW476M	J	47 6.3V Electrolytic	AB
C505	VCKYCY1HF473Z	J	0.047 50V Ceramic	AA
C506	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C508	VCKYD41CY103N	J	0.01 16V Ceramic	AA
C509	VCKYCY1EB153K	J	0.015 25V Ceramic	AA
C510	VCEAGA1HW335M	J	3.3 50V Electrolytic	AB
C511	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C512	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C513	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C514	VCKYCY1HF333Z	J	0.033 50V Ceramic	AA
C515	VCKYCY1CF683Z	J	0.068 16V Ceramic	AA
C516	VCEAEA1HW475M	J	4.7 50V Electrolytic	AB
C517	VCCCCY1HH180J	J	18p 50V Ceramic	AA
C519	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C520	VCEAEA1HW474M	J	0.47 50V Electrolytic	AB
C521	VCKYCY1EB223K	J	0.022 25V Ceramic	AA
C522	VCCCCY1HH680J	J	68p 50V Ceramic	AA
C523	VCEAEA1CW106M	J	10 16V Electrolytic	AB
C524	VCCCCY1HH820J	J	82p 50V Ceramic	AA
C525	VCEAEA1HW105M	J	1 50V Electrolytic	AB
C526	VCCCCY1HH680J	J	68p 50V Ceramic	AA
C527	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C528	VCCCCY1HH560J	J	56P 50V Ceramic	AA
C529	VCEAEA1HW475M	J	4.7 50V Electrolytic	AB

Ref. No.	Part No.	*	Description	Code
CAPACITORS (Continued)				
C530	VCCCPA1HH121J	J	120p 50V Ceramic	AA
C531	VCCSD41HL010M	J	1p 50V Ceramic	AA
C532	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C533	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C535	VCCCCY1HH181J	J	180p 50V Ceramic	AA
C536	VCCCCY1HH181J	J	180p 50V Ceramic	AA
C537	VCKYD41CY103N	J	0.01 16V Ceramic	AA
C601	VCKYCY1HB152K	J	1500p50V Ceramic	AA
C602	VCKYD41CX332N	J	3300p16V Ceramic	AA
C603	VCEAAA1HW475T	J	4.7 50V Electrolytic	AB
C604	VCEAGA1CW226M	J	22 16V Electrolytic	AB
C605	VCQYTA1HM123J	J	0.012 50V Mylar	AA
C606	VCKYCY1HB682K	J	6800p50V Ceramic	AA
C607	VCEAGA1CW476M	J	47 16V Electrolytic	AB
C608	RC-KZ0029GEZZ	J	0.01 25V Ceramic	AA
C609	RC-KZ0029GEZZ	J	0.01 25V Ceramic	AA
C610	VCEAGA1CW226M	J	22 16V Electrolytic	AB
C611	VCEAGA1CW106M	J	10 16V Electrolytic	AA
C612	VCKYCY1EB223K	J	0.022 25V Ceramic	AA
C613	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C614	VCCCCY1HH151J	J	150p 50V Ceramic	AA
C615	VCCCCY1HH151J	J	150p 50V Ceramic	AA
C616	VCKYCY1HB331K	J	330p 50V Ceramic	AA
C617	VCCCCY1HH220J	J	22p 50V Ceramic	AA
C618	VCEAGA1CW106M	J	10 16V Electrolytic	AA
C619	VCKYCY1HB821K	J	820p 50V Ceramic	AA
C621	VCEAGA1CW476M	J	47 16V Electrolytic	AB
C622	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C623	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C624	VCQPSA2AA562J	J	5600p100V Mylar	AC
C625	VCRYPA1HA221J	J	220p 50V Ceramic	AB
C626	RC-KZ0029GEZZ	J	0.01 25V Ceramic	AA
C701	VCKYCY1HB102K	J	1000p50V Ceramic	AA
C703	VCE9EA1HW105M	J	1 50V Elect. (N.P.)	AC
C704	VCEAEA1HW105M	J	1 50V Electrolytic	AB
C705	VCKYCY1HB102K	J	1000p50V Ceramic	AA
C706	VCEAEA1HW225M	J	2.2 50V Electrolytic	AB
C707	VCKYCY1HB102K	J	1000p50V Ceramic	AA
C708	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C709	VCEAEA0JW476M	J	47 6.3V Electrolytic	AB
C710	VCEAEA1CW106M	J	10 16V Electrolytic	AB
C711	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C712	VCEAEA1HW225M	J	2.2 50V Electrolytic	AB
C713	VCEAEA1HW225M	J	2.2 50V Electrolytic	AB
C714	VCEAEA1CW226M	J	22 16V Electrolytic	AB
C715	VCKYD41HB102K	J	1000p50V Ceramic	AA
C716	RC-EZ0123GEZZ	J	47 10V Electrolytic	AB
C717	VCEAEA1HW105M	J	1 50V Electrolytic	AB
C718	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C719	VCEAGA1HW105M	J	1 50V Electrolytic	AC
C720	VCKYCY1HB102K	J	1000p50V Ceramic	AA
C721	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C722	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C723	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C724	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA

Ref. No.	Part No.	*	Description	Code
CAPACITORS (Continued)				
C725	VCKYCY1HB472K	J	4700p50V Ceramic	AA
C726	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C727	VCEAEA0JW107M	J	100 6.3V Electrolytic	AB
C728	VCKYCY1HB472K	J	4700p50V Ceramic	AA
C729	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C730	VCEAEA0JW336M	J	33 6.3V Electrolytic	AB
C731	VCKYCY1HB102K	J	1000p50V Ceramic	AA
C732	VCFYSA1HB334J	J	0.33 50V M.Polypro	AB
C733	VCKYCY1CF334Z	J	0.33 16V Ceramic	AA
C734	VCKYCY1HF473Z	J	0.047 50V Ceramic	AA
C736	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C737	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C738	VCEAEA1HW105M	J	1 50V Electrolytic	AB
C740	VCKYCY1HB472K	J	4700p50V Ceramic	AA
C801	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C802	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C803	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C805	VCEAEA1HW105M	J	1 50V Electrolytic	AB
C807	VCCCCY1HH220J	J	22p 50V Ceramic	AA
C808	VCCCCY1HH220J	J	22p 50V Ceramic	AA
C811	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C812	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C813	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C817	VCKYCY1HB102K	J	1000P50V Ceramic	AA
C819	VCEAGA0JW180M	J	1000 6.3V Electrolytic	AC
C820	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C821	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C822	VCKYCY1CF334Z	J	0.33 16V Ceramic	AA
C823	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C824	VCEAGA1CW476M	J	47 16V Electrolytic	AB
C825	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C826	VCE9GA1HW105M	J	1 50V Elect. (N.P.)	AB
C829	VCKYD41CY103N	J	0.01 16V Ceramic	AA
△C901	RC-FZ016SGEZZ	J	0.47 250V M.Polypro	AK
△C902	RC-FZ008SGEZZ	J	0.1 250V M.Polypro	AD
△C907	RC-KZ0070CEZZ	J	2200p400V Ceramic	AD
△C908	RC-KZ0070CEZZ	J	2200p400V Ceramic	AD
△C909	RC-EZ0440GEZZ	J	47 400V Electrolytic	AH
△C910	VCEAGA2AW225M	J	2.2 100V Electrolytic	AB
△C911	VCFYAA2GA333K	J	0.033 400V M.Polypro	AD
△C912	RC-KZ0112CEZZ	J	100p 1kV Ceramic	AB
△C913	VCQYTA1HM473J	J	0.047 50V Mylar	AA
△C914	VCQYTA1HM473J	J	0.047 50V Mylar	AA
△C915	VCQYTA1HM472J	J	4700p50V Mylar	AB
C921	VCEAGA1AW477M	J	470 10V Electrolytic	AC
C922	VCEAGA1HW476M	J	47 50V Electrolytic	AB
C923	VCEAVA1CN228M	J	2200 16V Electrolytic	AH
△C924	RC-QZ0104GEZZ	J	2200p250V Mylar	AC
C925	VCEAVA1AN228M	J	2200 10V Electrolytic	AE
△C926	RC-QZ0104GEZZ	J	2200p250V Mylar	AC
C927	VCQYTA1HM103J	J	0.01 50V Mylar	AA
C928	VCEAGA1CW107M	J	100 16V Electrolytic	AB
C929	VCEAGA1AW477M	J	470 10V Electrolytic	AC
C930	VCEAGA1HW476M	J	47 50V Electrolytic	AB
C931	VCEAGA1HW105M	J	1 50V Electrolytic	AC

Ref. No.	Part No.	*	Description	Code
CAPACITORS (Continued)				
C932	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C935	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C951	VCKYCY1HF223Z	J	0.022 50V Ceramic	AA
C952	VCEAGA1HW335M	J	3.3 50V Electrolytic	AB
C953	VCEAGA1CW106M	J	10 16V Electrolytic	AA
C954	VCEAGA1HW335M	J	3.3 50V Electrolytic	AB
C955	VCEAGA1CW476M	J	47 16V Electrolytic	AB
C957	VCEAGA1CW226M	J	22 16V Electrolytic	AB
C958	VCEAGA1CW226M	J	22 16V Electrolytic	AB
C959	VCEAGA1CW476M	J	47 16V Electrolytic	AB
C960	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C961	VCEAGA1HW105M	J	1 50V Electrolytic	AC
C962	VCEAGA1CW476M	J	47 16V Electrolytic	AB
C963	VCKYCY1HF333Z	J	0.033 50V Ceramic	AA
C965	VCKYPA1HF223Z	J	0.022 50V Ceramic	AA
C966	VCEAGA1HW106M	J	10 50V Electrolytic	AC
C1401	VCFYSA1HB334J	J	0.33 50V M.Polypro	AB
C1402	VCFYSA1HB334J	J	0.33 50V M.Polypro	AB
C1403	VCCCCY1HH820J	J	82p 50V Ceramic	AA
C1451	VCKYCY1HB102K	J	1000p50V Ceramic	AA
C1452	VCKYCY1HB102K	J	1000p50V Ceramic	AA
C1453	VCEAGA1HW105M	J	1 50V Electrolytic	AC
C1551	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1552	VCFYSA1HB104J	J	0.1 50V M.Polypro	AB
C1553	VCKYPA1HF103Z	J	0.01 50V Ceramic	AA
C1554	VCEAGA1CW106M	J	10 16V Electrolytic	AA
C1555	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1557	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1558	VCKYD41CY103N	J	0.01 16V Ceramic	AA
C1559	VCEA2A1CW227M	J	220 16V Electrolytic	AB
C1560	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1801	VCEAGA1HW224M	J	0.22 50V Electrolytic (GM only)	AA
C1802	VCEAGA1HW104M	J	0.1 50V Electrolytic (GM only)	AA
C1803	VCEAGA1HW224M	J	0.22 50V Electrolytic (GM only)	AA
C1805	VCEAGA0JW476M	J	47 6.3V Electrolytic (GM only)	AB
C1806	VCCCPA1HH270J	J	27p 50V Ceramic (GM only)	AA
C1807	VCCCCY1HH220J	J	22p 50V Ceramic (GM only)	AA
C2201	VCEAGA1HW335M	J	3.3 50V Electrolytic	AB
C2202	VCEAGA1HW335M	J	3.3 50V Electrolytic	AB
C2401	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C2402	VCEAGA1CW476M	J	47 16V Electrolytic	AB
C2403	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C2404	VCEAGA1HW105M	J	1 50V Electrolytic	AC
C2405	VCKYD41HB102K	J	1000p50V Ceramic	AA
C2406	VCKYCY1HF223Z	J	0.022 50V Ceramic	AA
C2407	VQYTA1HM563J	J	0.056 50V Mylar	AB
C2408	VCEAGA1HW105M	J	1 50V Electrolytic	AC
C4401	VCEAGA1CW107M	J	100 16V Electrolytic	AB
C4402	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA

Ref. No.	Part No.	*	Description	Code
CAPACITORS (Continued)				
C4403	VCEA2A0JW477M	J	470 6.3V Electrolytic	AB
C4404	VCEAGA1CW476M	J	47 16V Electrolytic	AB
C5001	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C5002	VCEAGA0JW476M	J	47 6.3V Electrolytic	AB
C5003	VCKYPA1HF103Z	J	0.01 50V Ceramic	AA
C5004	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C5010	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C5011	VCCCCY1HH470J	J	47p 50V Ceramic (GM only)	AA
C6601	VCCCCY1HH100D	J	10p 50V Ceramic (GM only)	AA
C6602	VCCCCY1HH100D	J	10p 50V Ceramic (GM only)	AA
C8851	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA

RESISTORS

R201	VRS-CY1JF681J	J	680 1/16W Metal Oxide	AA
R202	VRS-CY1JF333J	J	33k 1/16W Metal Oxide	AA
R203	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R204	VRS-RA2BE561J	J	560 1/8W Carbon	AA
R205	VRS-CY1JF392J	J	3.9k 1/16W Metal Oxide	AA
R206	VRS-RA2BE561J	J	560 1/8W Carbon	AA
R207	VRS-RA2BE561J	J	560 1/8W Carbon	AA
R208	VRS-RA2BE561J	J	560 1/8W Carbon	AA
R209	VRS-CY1JF152J	J	1.5k 1/16W Metal Oxide	AA
R210	VRS-CY1JF222J	J	2.2k 1/16W Metal Oxide	AA
R211	VRD-RA2BE271J	J	270 1/8W Carbon	AA
R212	VRS-CY1JF472J	J	4.7k 1/16W Metal Oxide	AA
R213	VRS-CY1JF222J	J	2.2k 1/16W Metal Oxide	AA
R214	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R215	VRS-CY1JF222J	J	2.2k 1/16W Metal Oxide	AA
R217	VRS-CY1JF102J	J	1k 1/16W Metal Oxide	AA
R219	VRS-CY1JF122J	J	1.2k 1/16W Metal Oxide	AA
R220	VRS-CY1JF152J	J	1.5k 1/16W Metal Oxide	AA
R226	VRS-CY1JF102J	J	1k 1/16W Metal Oxide	AA
R228	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R229	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
R230	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R301	VRS-CY1JF681J	J	680 1/16W Metal Oxide	AA
R302	VRS-CY1JF681J	J	680 1/16W Metal Oxide	AA
R303	VRS-CY1JF102J	J	1k 1/16W Metal Oxide	AA
R304	VRS-CY1JF223J	J	22k 1/16W Metal Oxide	AA
R305	VRD-RA2BE333J	J	33k 1/8W Carbon	AA
R306	VRS-CY1JF154J	J	150k 1/16W Metal Oxide	AA
R307	VRS-CY1JF100J	J	10 1/16W Metal Oxide	AA
R330	VRS-CY1JF223J	J	22k 1/16W Metal Oxide	AA
R331	VRS-CY1JF473J	J	47k 1/16W Metal Oxide	AA
R332	VRS-CY1JF471J	J	470 1/16W Metal Oxide	AA
R333	VRS-CY1JF472J	J	4.7k 1/16W Metal Oxide	AA
R334	VRS-CY1JF561J	J	560 1/16W Metal Oxide	AA
R335	VRS-CY1JF562J	J	5.6k 1/16W Metal Oxide	AA
R336	VRS-CY1JF822J	J	8.2k 1/16W Metal Oxide	AA
R337	VRS-CY1JF333J	J	33k 1/16W Metal Oxide	AA
R338	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
RESISTORS (Continued)				
R339	VRS-CY1JF333J	J	33k 1/16W Metal Oxide	AA
R501	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R502	VRS-CY1JF821J	J	820 1/16W Metal Oxide	AA
R506	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R507	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R508	VRS-CY1JF122J	J	1.2k 1/16W Metal Oxide	AA
R510	VRS-CY1JF273J	J	27k 1/16W Metal Oxide	AA
R511	VRS-CY1JF183J	J	18k 1/16W Metal Oxide	AA
R513	VRS-CY1JF102J	J	1k 1/16W Metal Oxide	AA
R515	VRS-CY1JF102J	J	1k 1/16W Metal Oxide	AA
R517	VRS-CY1JF102J	J	1k 1/16W Metal Oxide	AA
R520	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R521	VRS-CY1JF104J	J	100k 1/16W Metal Oxide	AA
R522	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
R523	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
R524	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
R540	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R601	VRS-CY1JF100J	J	10 1/16W Metal Oxide	AA
R602	VRS-CY1JF333J	J	33k 1/16W Metal Oxide	AA
R603	VRS-CY1JF221J	J	220 1/16W Metal Oxide	AA
R604	VRS-CY1JF274J	J	270k 1/16W Metal Oxide	AA
R605	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R606	VRS-CY1JF472J	J	4.7k 1/16W Metal Oxide	AA
R607	VRS-CY1JF332J	J	3.3k 1/16W Metal Oxide	AA
R608	VRS-CY1JF822J	J	8.2k 1/16W Metal Oxide	AA
R609	VRS-CY1JF332J	J	3.3k 1/16W Metal Oxide	AA
R610	VRS-CY1JF225J	J	2.2M 1/16W Metal Oxide	AA
R611	VRS-CY1JF563J	J	56k 1/16W Metal Oxide	AA
R612	VRS-CY1JF682J	J	6.8k 1/16W Metal Oxide	AA
R613	VRD-RA2BE473J	J	47k 1/8W Carbon	AA
R614	VRS-CY1JF682J	J	6.8k 1/16W Metal Oxide	AA
R615	VRS-CY1JF823J	J	82k 1/16W Metal Oxide	AA
R616	VRS-CY1JF183J	J	18k 1/16W Metal Oxide	AA
R617	VRS-CY1JF152J	J	1.5k 1/16W Metal Oxide	AA
R618	VRD-RA2BE153J	J	15k 1/8W Carbon	AA
R619	VRS-CY1JF101J	J	100 1/16W Metal Oxide	AA
R620	VRS-CY1JF471J	J	470 1/16W Metal Oxide	AA
R621	VRD-RA2BE683J	J	68k 1/8W Carbon	AA
R622	VRS-CY1JF683J	J	68k 1/16W Metal Oxide	AA
R623	VRS-CY1JF333J	J	33k 1/16W Metal Oxide	AA
R624	VRS-CY1JF563J	J	56k 1/16W Metal Oxide	AA
R625	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R626	VRS-CY1JF332J	J	3.3k 1/16W Metal Oxide	AA
R629	VRS-CY1JF153J	J	15k 1/16W Metal Oxide	AA
R630	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R631	VRS-CY1JF470J	J	47 1/16W Metal Oxide	AA
R632	VRS-CY1JF682J	J	6.8k 1/16W Metal Oxide	AA
R633	VRG-SC2EB4R7J	J	4.7 1/4W Fuse Resistor	AB
R634	See Control			
R635	VRS-CY1JF153J	J	15k 1/16W Metal Oxide	AA
R636	VRS-CY1JF562J	J	5.6k 1/16W Metal Oxide	AA
R637	VRS-CY1JF682J	J	6.8k 1/16W Metal Oxide	AA
R638	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R639	VRD-RA2BE153J	J	15k 1/8W Carbon	AA
R701	VRS-CY1JF272J	J	2.7k 1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
RESISTORS (Continued)				
R703	VRS-CY1JF223J	J	22k 1/16W Metal Oxide	AA
R704	VRS-CY1JF222J	J	2.2k 1/16W Metal Oxide	AA
R705	VRS-CY1JF154J	J	150k 1/16W Metal Oxide	AA
R706	VRS-CY1JF223J	J	22k 1/16W Metal Oxide	AA
R707	VRS-CY1JF102J	J	1k 1/16W Metal Oxide	AA
R708	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
R709	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R710	VRS-CY1JF102J	J	1k 1/16W Metal Oxide	AA
R711	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R713	VRS-CY1JF471J	J	470 1/16W Metal Oxide	AA
R714	VRS-CY1JF562J	J	5.6k 1/16W Metal Oxide	AA
R715	VRS-CY1JF682J	J	6.8k 1/16W Metal Oxide	AA
R716	VRD-RA2BE393J	J	39k 1/8W Carbon	AA
R717	VRD-RA2BE183J	J	18k 1/8W Carbon	AA
R718	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R719	VRS-CY1JF823J	J	82k 1/16W Metal Oxide	AA
R720	VRS-CY1JF153J	J	15k 1/16W Metal Oxide	AA
R723	VRS-CY1JF224J	J	220k 1/16W Metal Oxide	AA
R724	VRS-CY1JF104J	J	100k 1/16W Metal Oxide	AA
R725	VRS-CY1JF563J	J	56k 1/16W Metal Oxide	AA
R726	VRS-CY1JF474J	J	470k 1/16W Metal Oxide	AA
R727	VRS-CY1JF272J	J	2.7k 1/16W Metal Oxide	AA
R728	VRS-CY1JF224J	J	220k 1/16W Metal Oxide	AA
R729	VRS-CY1JF683J	J	68k 1/16W Metal Oxide	AA
R730	VRS-CY1JF334J	J	330k 1/16W Metal Oxide	AA
R731	VRS-CY1JF392J	J	3.9k 1/16W Metal Oxide	AA
R732	VRS-CY1JF473J	J	47k 1/16W Metal Oxide	AA
R733	VRD-RA2BE155J	J	1.5M 1/8W Carbon	AA
R734	VRS-CY1JF223J	J	22k 1/16W Metal Oxide	AA
R735	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R736	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R737	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R738	VRD-RA2BE223J	J	22k 1/8W Carbon	AA
R739	VRS-CY1JF153J	J	15k 1/16W Metal Oxide	AA
R741	VRS-CY1JF104J	J	100k 1/16W Metal Oxide	AA
R742	VRS-CY1JF273J	J	27k 1/16W Metal Oxide	AA
R743	VRS-CY1JF334J	J	330k 1/16W Metal Oxide	AA
R744	VRD-RA2HD1R0J	J	1 1/2W Carbon	AA
R745	VRD-RA2HD1R0J	J	1 1/2W Carbon	AA
R746	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R747	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
R748	VRS-CY1JF223J	J	22k 1/16W Metal Oxide	AA
R752	VRD-RA2BE471J	J	470 1/8W Carbon	AA
R801	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R802	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R804	VRD-RA2BE471J	J	470 1/8W Carbon	AA
R805	VRD-RA2BE471J	J	470 1/8W Carbon	AA
R806	VRS-CY1JF471J	J	470 1/16W Metal Oxide	AA
R807	VRS-CY1JF471J	J	470 1/16W Metal Oxide	AA
R809	VRS-CY1JF102J	J	1k 1/16W Metal Oxide	AA
R810	VRS-CY1JF102J	J	1k 1/16W Metal Oxide	AA
R812	VRS-CY1JF471J	J	470 1/16W Metal Oxide	AA
R813	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R814	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R815	VRS-CY1JF104J	J	100k 1/16W Metal Oxide	AA

Ref. No.	Part No.	*	Description	Code
RESISTORS (Continued)				
R821	VRS-CY1JF472J	J	4.7k 1/16W Metal Oxide	AA
R822	VRS-CY1JF273J	J	27k 1/16W Metal Oxide	AA
R823	VRD-RA2BE471J	J	470 1/8W Carbon	AA
R824	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
R825	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
R851	VRD-RA2EE151J	J	150 1/4W Carbon	AA
R854	VRS-CY1JF123J	J	12k 1/16W Metal Oxide	AA
R855	VRD-RA2BE123J	J	12k 1/8W Carbon	AA
R856	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
R857	VRD-RA2BE271J	J	270 1/8W Carbon	AA
R858	VRS-CY1JF104J	J	100k1/16W Metal Oxide	AA
R859	VRD-RA2BE271J	J	270 1/8W Carbon	AA
R860	VRS-CY1JF104J	J	100k1/16W Metal Oxide	AA
R861	VRD-RA2BE221J	J	220 1/8W Carbon	AA
R862	VRD-RA2BE154J	J	150k1/8W Carbon	AA
R863	VRD-RA2BE221J	J	220 1/8W Carbon	AA
R864	VRS-CY1JF154J	J	150k1/16W Metal Oxide	AA
△R901	VRD-RA2HD105J	J	1M 1/2W Carbon	AA
△R902	VRC-UA2HG685K	J	6.8M1/2W Solid	AA
△R903	VRC-UA2HG685K	J	6.8M1/2W Solid	AA
△R904	RR-WZ0003GEZZ	J	4.7 2W Cement	AD
△R905	VRD-RA2HD224J	J	220k1/2W Carbon	AA
△R906	VRD-RA2HD224J	J	220k1/2W Carbon	AA
△R907	VRD-RA2EE563J	J	56k 1/4W Carbon	AA
△R908	RR-SZ0007GEZZ	J	68k 2W Cement	AB
△R909	VRD-RA2HD470J	J	47 1/2W Carbon	AA
△R910	VRD-RA2HD470J	J	47 1/2W Carbon	AA
△R911	VRD-RA2EE471J	J	470 1/4W Carbon	AA
R921	VRG-SC2EB1R0J	J	1 1/4W Fuse Resistor	AB
R922	VRD-RA2HD100J	J	10 1/2W Carbon	AA
R924	VRG-SC2EB100J	J	10 1/4W Fuse Resistor	AB
R925	VRD-RA2BE221J	J	220 1/8W Carbon	AA
R926	VRS-CY1JF221J	J	220 1/16W Metal Oxide	AA
R927	VRS-CY1JF272J	J	2.7k 1/16W Metal Oxide	AA
R928	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R929	VRS-CY1JF183J	J	18k 1/16W Metal Oxide	AA
R930	VRS-CY1JF392J	J	3.9k 1/16W Metal Oxide	AA
R931	VRS-CY1JF682J	J	6.8k 1/16W Metal Oxide	AA
R932	VRS-CY1JF221J	J	220 1/16W Metal Oxide	AA
R933	VRS-CY1JF222J	J	2.2k 1/16W Metal Oxide	AA
R951	VRD-RA2BER56J	J	0.56 1/8W Carbon	AA
R952	VRD-RA2BER56J	J	0.56 1/8W Carbon	AA
R953	VRD-RA2HD472J	J	4.7k 1/2W Carbon	AA
R954	VRD-RA2BE270J	J	27 1/8W Carbon	AA
R955	VRD-RA2BE683J	J	68k 1/8W Carbon	AA
R956	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R960	VRS-CY1JF472J	J	4.7k 1/16W Metal Oxide	AA
R961	VRD-RA2BE562J	J	5.6k 1/8W Carbon	AA
R962	VRS-CY1JF683J	J	68k 1/16W Metal Oxide	AA
R963	VRS-CY1JF472J	J	4.7k 1/16W Metal Oxide	AA
R964	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R965	VRS-CY1JF123J	J	12k 1/16W Metal Oxide	AA
R966	VRD-RA2BE681J	J	680 1/8W Carbon	AA
R967	VRD-RA2BE333J	J	33k 1/8W Carbon	AA
R969	VRD-RA2HD561J	J	560 1/2W Carbon	AA

Ref. No.	Part No.	*	Description	Code
RESISTORS (Continued)				
R970	VRS-CY1JF333J	J	33k 1/16W Metal Oxide	AA
R971	VRD-RA2HD471J	J	470 1/2W Carbon	AA
R1401	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R1402	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R1403	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R1404	VRS-CY1JF153J	J	15k 1/16W Metal Oxide	AA
R1405	VRS-CY1JF183J	J	18k 1/16W Metal Oxide	AA
R1406	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R1451	VRS-CY1JF561J	J	560 1/16W Metal Oxide	AA
R1452	VRS-CY1JF561J	J	560 1/16W Metal Oxide	AA
R1453	VRD-RA2EE472J	J	4.7k 1/4W Carbon	AA
R1555	VRS-CY1JF334J	J	330k1/16W Metal Oxide	AA
R1556	VRS-CY1JF474J	J	470k1/16W Metal Oxide	AA
R1557	VRS-CY1JF101J	J	100 1/16W Metal Oxide	AA
R1801	VRS-CY1JF331J	J	330 1/16W Metal Oxide	AA
			(GM only)	
R1802	VRS-CY1JF331J	J	330 1/16W Metal Oxide	AA
			(GM only)	
R1803	VRS-CY1JF331J	J	330 1/16W Metal Oxide	AA
			(GM only)	
R1804	VRS-CY1JF472J	J	4.7k 1/16W Metal Oxide	AA
			(GM only)	
R1805	VRS-CY1JF223J	J	22k 1/16W Metal Oxide	AA
			(GM only)	
R1806	VRS-CY1JF223J	J	22k 1/16W Metal Oxide	AA
			(GM only)	
R2201	VRS-CY1JF750J	J	75 1/16W Metal Oxide	AA
R2202	VRS-CY1JF101J	J	100 1/16W Metal Oxide	AA
R2203	VRD-RA2BE391J	J	390 1/8W Carbon	AA
R2401	VRS-CY1JF392J	J	3.9k 1/16W Metal Oxide	AA
R2402	VRS-CY1JF681J	J	680 1/16W Metal Oxide	AA
R2403	VRD-RA2BE154J	J	150k1/8W Carbon	AA
R2404	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R2405	VRD-RA2BE102J	J	1k 1/8W Carbon	AA
R2410	VRD-RA2BE684J	J	680k1/8W Carbon	AA
R4401	VRD-RA2BE181J	J	180 1/8W Carbon	AA
R4402	VRD-RA2BE151J	J	150 1/8W Carbon	AA
R4403	VRD-RA2BE750J	J	75 1/8W Carbon	AA
R4404	VRS-CY1JF104J	J	100k1/16W Metal Oxide	AA
R4405	VRS-CY1JF101J	J	100 1/16W Metal Oxide	AA
R4407	VRS-CY1JF332J	J	3.3k 1/16W Metal Oxide	AA
R5001	VRS-CY1JF471J	J	470 1/16W Metal Oxide	AA
R5002	VRD-RA2EE1R0J	J	1 1/4W Carbon	AA
R5003	VRD-RA2BE104J	J	100k1/8W Carbon	AA
R5004	VRS-CY1JF104J	J	100k1/16W Metal Oxide	AA
R5005	VRS-CY1JF104J	J	100k1/16W Metal Oxide	AA
R5006	VRS-CY1JF104J	J	100k1/16W Metal Oxide	AA
R5007	VRS-CY1JF104J	J	100k1/16W Metal Oxide	AA
R6601	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R6602	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R6609	VRS-CY1JF272J	J	2.7k 1/16W Metal Oxide	AA
R6610	VRS-CY1JF682J	J	6.8k 1/16W Metal Oxide	AA
R6613	VRS-CY1JF331J	J	330 1/16W Metal Oxide	AA
R6614	VRS-CY1JF332J	J	3.3k 1/16W Metal Oxide	AA
R8851	VRS-CY1JF472J	J	4.7k 1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
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RESISTORS (Continued)

R8852	VRS-CY1JF2-23J	J	22k 1/16W Metal Oxide	AA
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MISCELLANEOUS PARTS

DG5001	VVK10BT143G-1	J	Fluorescent Display Tube	AT
F901	QFS-C2026CEZZ	J	Fuse T2AH/250V	AE
FB801	RBLN-0013GEZZ	J	Ferrite Bead	AB
FB2201	RBLN-0043CEZZ	J	Ferrite Bead (GM only)	AB
FH901	QFSHD1009CEZZ	J	Fuse Holder	AA
FH902	QFSHD1010CEZZ	J	Fuse Holder	AA
P601	QPLGN0247REZZ	J	Plug, 2pin (AE)	AA
P701	QPLGN0657REZZ	J	Plug, 6pin (AO)	AC
P702	QPLGN0247REZZ	J	Plug, 2pin (AL)	AA
P704	QPLGZ1074GEZZ	J	Plug, 10pin (AC)	AC
P705	QPLGZ0360GEZZ	J	Plug, 3pin (AR)	AA
P901	QPLGN0269GEZZ	J	Plug, 2pin (PA)	AB
SC301	QSOCN0794REZZ	J	Socket, 7pin (AH)	AE
SC601	QSOCN0884REZZ	J	Socket, 8pin (AA)	AB
SC701	QSOCN0684REZZ	J	Socket, 6pin (AD)	AB
SC2201	QSOCZ1280GEZZ	J	Socket, A/V	AH
S851	QSW-K0042AJZZ	V	Switch, Rec	AC
S5001	QSW-K0002AJZZ	V	Switch, Power	AD
S5002	QSW-K0002AJZZ	V	Switch, TV/VCR	AD
S5004	QSW-K0002AJZZ	V	Switch, Set-up	AD

— End of Main —

Ref. No.	Part No.	★	Description	Code
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DUNTK4929TEV2 OPERATION UNIT

MISCELLANEOUS PARTS

SC8801	QSOCZ0657GEZZ	J	Socket 6pin (OA)	AB
S8801	QSW-K0079GEZZ	J	Switch, Stop/Eject	AB
S8802	QSW-K0079GEZZ	J	Switch, Play	AB
S8803	QSW-K0079GEZZ	J	Switch, REC	AB
S8804	QSW-K0079GEZZ	J	Switch, Pause/Still	AB
S8805	QSW-K0079GEZZ	J	Switch, CH (+)	AB
S8806	QSW-K0079GEZZ	J	Switch, CH (-)	AB
S8807	QSW-K0079GEZZ	J	Switch, REW	AB
S8808	QSW-K0079GEZZ	J	Switch, FF	AB

— End of Operation —

Ref. No.	Part No.	★	Description	Code
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DUNTK4930TEV1 R/C RECEIVER UNIT

MISCELLANEOUS PARTS

SC5501	QSOCZ0360GEZZ	J	Socket 3pin (RA)	AB
RMC5501	RRMCU0209CEZZ	J	Remote Control Receiver	AH

— End of R/C Receiver —

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
MECHANISM CHASSIS PARTS					45	MLEVF0422AJZZ	V	Supply Loading Arm Ass'y	AG
1	LCHSM0148AJZZ	V	Main Chassis Ass'y	AY	46	CLEVP0239AJ00	V	Auto Head Cleaner Ass'y	AF
2	NROLP0084AJZZ	V	Supply Impedance Roller	AB	47	MSPRT0379AJFJ	V	Loading Double Action Spring	AB
3	PGIDH0031AJFW	V	Supply Impedance Roller Frange	AD	48	NDAiV1065AJ00	V	Reel Disk	AB
4	PGIDS0027AJZZ	V	Supply Impedance Roller Lower Frange	AA	49	MARMP0053AJZZ	V	Reel Idler	AM
5	NSFTL0563AJFW	V	Supply Impedance Roller Inner	AE	50	MLEVP0240AJZZ	V	Clutch Lever	AB
6	LPOLM0050GEZZ	J	Supply Pole Base Ass'y	AM	51	NGERH1221AJZZ	V	Clutch Gear Ass'y	AK
7	LPOLM0051GEZZ	J	Take-Up Pole Base Ass'y	AM	52	NPLYV0147AJZZ	V	Reel Pulley Ass'y	AP
8	NROLP0110GEZZ	J	Guide Roller	AH	53	NGERH1224AJZZ	V	Playback Gear	AD
9	MLEVF0414AJZZ	V	Reverse Guide Lever Ass'y	AG	54	MLEVP0241AJZZ	V	Clutch Connect Arm	AB
10	MSPRD0147AJFJ	V	Reverse Guide Spring	AB	55	MLEVP0242AJZZ	V	Take-Up Main Brake Ass'y	AK
11	PSPAZ0391AJZZ	V	Reverse Guide Spacer	AE	56	MLEVP0249AJZZ	V	Take-Up Lock Lever	AC
12	RHEDU0083GEZZ	J	Audio/Control Head	AR	57	MLEVP0244AJZZ	V	Supply Main Brake Lever Ass'y	AH
13	MLEVF0415AJFW	V	Audio/Control Head Arm	AC	58	MSPRT0380AJFJ	V	Main Brake Spring	AB
14	MSPRD0148AJFJ	V	Audio/Control Head Arm Spring	AB	59	NGERH1225AJZZ	V	Cassette Hausing Control Drive Gear	AD
15	MSPRC0189AJFJ	V	Azimuth Spring	AB	60	PREFL1004AJZZ	V	Light Guide	AD
16	RHEDT0032GEZZ	J	Full Erase Head	AK	61	MLEVP0250AJZZ	V	Slow Brake Ass'y	AD
17	PSPAZ0392AJZZ	V	Audio/Control Head Arm Spacer	AB	62	MSPRT0383AJFJ	V	Slow Brake Spring	AC
18	QPWBF4735AJZZ	V	Audio/Control Head PWB	AC	63	RMOTN2051GEZZ	J	Capstan Motor	BD
19	QSOEN0885REZZ	J	Socket, 8 pin	AB	64	RMOTM1062GEZZ	J	Loading Motor	AP
20	NBLTK0065AJ00	V	Reel Belt	AE	65	QCNW-0156AJZZ	V	Lead Wire for Loading Motor	AE
21	MLEVF0416GEZZ	J	Pinch Roller Lever Ass'y	AU	66	QCNW-0155AJZZ	V	FFC for Audio/Control	AF
22	MLEVP0237AJZZ	V	Pinch Double Action Lever	AD	67	QCNW-0157AJZZ	V	FFC for Drum Motor	AF
23	MLEVF0417AJZZ	V	Pinch Drive Lever Ass'y	AG	68	PSPAZ0434GEFW	J	Preload Collar	AL
24	NGERH1216AJZZ	V	Pinch Drive Cam	AE	69	LX-XZ3032GEFP	J	Preload Collar Mounting Set Screw (M4 + 5WP)	AC
25	MLEVP0238AJZZ	V	Open Lever	AC	70	PGIDC0052GEFW	J	Drum Base	AK
26	MSPRT0377AJFJ	V	Pinch Double Action Spring	AC	71	XBPSD30P08J00	J	Drum Base Mounting Screw (SW3P + 8S)	AA
27	MSPRD0149AJFJ	V	Earth Spring	AB	72	QBRSK0034GEZZ	J	Drum Earth Brush	AD
28	MLEVF0418AJZZ	V	Tension Arm Ass'y	AG	73	MSPRC0194GEFJ	J	Drum Earth Brush Spring	AA
29	LBOSZ1001AJZZ	V	Tension Arm Boss	AB	74	RMOTP1116GEZZ	J	Drum Drive Motor	BF
30	MSPRT0378AJFJ	V	Tension Spring	AC	75	XBPSD26P06J00	J	Drum Drive Motor Mounting Screw (SW2.6P + 6S)	AA
31	LBNDK1008AJZZ	V	Tension Band Ass'y	AG	76	DDRMW0015TEV0	U	Drum Ass'y	BS
32	NSFTP0032AJZZ	V	Tension Pole Adjust Cam	AB					
33	NGERH1217AJ00	V	Master Cam	AE					
34	NPLYV0146AJZZ	V	Motor Pulley	AB					
35	NGERW1051AJZZ	V	Worm Gear	AC					
36	NGERW1052AJZZ	V	Worm Wheel Gear	AC					
37	NGERH1218AJZZ	V	Connect Gear	AC					
38	LANGK0161AJZZ	V	Loading Motor Angle Ass'y	AD					
39	NBRGP0017AJZZ	V	Bearing	AB					
40	MSLiP0006AJZZ	V	Sifter	AH					
41	MLEVF0419AJZZ	V	Sifter Drive Lever Ass'y	AG					
42	NGERH1219AJZZ	V	Take-Up Loading Gear	AD					
43	MLEVF0420AJZZ	V	Take-Up Loading Arm Ass'y	AG					
44	NGERH1220AJZZ	V	Supply Loading Gear	AC					

— End of Mechanism Chassis Parts —

Ref. No.	Part No.	★	Description	Code
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CASSETTE HOUSING CONTROL PARTS

300	CHLDX3070TEV1	U	Cassette Housing Control Ass'y	AX
301	LHLDX1024AJ00	V	Frame (L)	AG
302	LHLDX1025AJ00	V	Frame (R)	AG
303	NGERR3003AJFW	V	Drive Angle	AE
304	NGERR1005AJZZ	V	Double Action Rack	AC
305	MSPRT0381AJFJ	V	Double Action Spring	AC
306	MSLIF0070AJFW	V	Slider	AH
307	LHLDX1026AJ00	V	Holder (L)	AD
308	MLEVP0246AJ00	V	Proof Lever (L)	AB
309	MSPRD0150AJFJ	V	Proof Lever (L) Spring	AB
310	LHLDX1027AJ00	V	Holder (R)	AD
311	MSPRP0159AJFJ	V	Cassette Spring	AD
312	MLEVF0424AJFW	V	Proof Lever (R)	AC
313	MSPRD0151AJFJ	V	Proof Lever (R) Spring	AB
314	NGERH1226AJ00	V	Drive Gear (L)	AD
315	MSPRD0152AJFJ	V	Drive Gear (L) Spring	AC
316	NGERH1227AJ00	V	Drive Gear (R)	AD
317	MSPRD0153AJFJ	V	Drive Gear (R) Spring	AC
318	NGERH1228AJ00	V	Synchro Gear	AC
319	NSFTD0036AJFD	V	Main Shaft	AG
320	LANGF9570AJFW	V	Upper Plate	AH
321	MLEVP0247AJ00	V	Door Open Lever	AC
322	MLEVP0248AJ00	V	Sensor Lever	AB
323	MSPRT0382AJFJ	V	Sensor Lever Spring	AB
324	XHPSD30P06WS0	J	C3P + 6S (for Cassette Housing Control)	AA
325	PSPAH0008AJ00	V	Spacer	AB

— End of Cassette Housing Control Parts —

Ref. No.	Part No.	★	Description	Code
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SCREWS, NUTS AND WASHERS

200	LX-XZ3030GEFD	J	Set Screw	AC
201	LX-BZ3095GEFD	J	Audio/Control Head Screw	AA
202	LX-BZ3096GEFD	J	Tilt Adjusting Screw	AA
203	XBPSD26P06000	J	Azimuth Adjusting Screw (2.6P + 6S)	AA
204	XHPSD26P08WS0	J	Screw, C2.6P + 8S (For FE Head)	AA
206	XBPSD30P04J00	J	Screw, SW3P + 4S (For Loading Motor)	AA
207	XHPSD26P06000	J	Screw, 2.6P + 6S (For Capstan Motor)	AA
208	XHPSD26P06WS0	J	Screw, C2.6P + 6S (For Loading Motor Angle Ass'y)	AA
209	XHPSD30P08WS0	J	Screw, C3P + 8S (For Drum Base)	AA
210	LX-NZ3046GEFW	J	X-Position Adjusting Nut	AB
211	LX-NZ3019GEZZ	J	Reverse Guide Adjusting Nut	AB
212	XNFSD40-31000	J	Audio/Control Head Adjusting Nut (M4)	AB
213	XNFSD20-16000	J	S.I. Roller Adjusting Nut (M2)	AA
214	XWHJZ52-05110	J	Washer, W5.2P-11-0.5 (Reel Height Adj.)	AB
215	XWHJZ52-03110	V	Washer, W5.2P-11-0.3 (Reel Height Adj.)	AB
216	XWHJZ52-04110	V	Washer, W5.2P-11-0.4 (Reel Height Adj.)	AB
217	XWHJZ52-06110	V	Washer, W5.2P-11-0.6	AB
218	XWHJZ52-07110	V	Washer, W5.2P-11-0.7	AB
219	XWHJZ31-02070	J	Washer, W3.1P-7-0.25	AA
220	LX-WZ1073GE00	J	Cut Washer, CW4.5P-11-0.5	AB
221	LX-WZ1006GE00	J	Cut Washer, CW2.6P-5.4-0.5	AA
222	LX-WZ1041GE00	J	Cut Washer, CW2.6P-6-0.5	AA
223	XRESJ40-06000	J	E-Ring, E-4	AA
224	LX-WZ1077AJ00	V	Bearing Fixed Washer t0.4 (Worm Gear THRUST PLAY Adj.)	AB
225	LX-WZ1078AJ00	V	Bearing Fixed Washer t0.5 (Worm Gear THRUST PLAY Adj.)	AB
226	LX-WZ1079AJ00	V	Bearing Fixed Washer t0.6 (Worm Gear THRUST PLAY Adj.)	AB

Ref. No.	Part No.	★	Description	Code
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SCREWS, NUTS AND WASHERS (Continued)

227	LX-WZ1080AJ00	V	Bearing Fixed Washer t0.7 (Worm Gear THRUST PLAY Adj.)	AB
228	LX-WZ1081AJ00	V	Bearing Fixed Washer t0.8 (Worm Gear THRUST PLAY Adj.)	AB

—— End of Screws, Nuts and Washers ——

Ref. No.	Part No.	★	Description	Code
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FRONT PANEL PARTS

501	CPNLC1870TEV0	U	Front Panel Ass'y (VC-A462GM)	BA
501	CPNLC1878TEV0	U	Front Panel Ass'y (VC-A462SM)	BA
501-2	JB TN-2608UMSA	U	Operate Button	AC
501-3	CB TN-2597TEV3	U	Play Button Ass'y	AK
501-3-1	JB TN-2597UMSC	U	Play Button	AF
501-3-2	JB TN-2598UMSC	U	FF/REW Button	AF
501-4	JB TN-2609UMSA	U	CH Set Button	AC
501-5	HDECQ1185UMSA	U	Front Decoration Window	AG
501-6	HDECQ1207UMSB	U	Cassette Flap	AG
501-7	HBDGB1008AJSA	V	Badge, "SHARP"	AE
501-8	MSPRD0103AJFJ	V	Cassette Spring	AB

MECHANICAL PARTS

601	GCABA3090UMSE	U	Top Cabinet	AU
602	CCABB1143TEV0	U	Frame Ass'y	AV
602-2	PFLT-0016AJZZ	V	Foot Felt	AB
603	GCOVA1841UMZZ	U	Antenna Terminal Cover	AE
604	LX-HZ3079GEFD	U	Screw	AB
605	XEBSD30P12000	J	Screw	AA
606	XEBSD40P12000	J	Screw	AA
607	XHPSD30P06WS0	J	Screw	AA
608	XESSF30P12000	J	Screw	AA
609	PSPAZ0390AJZZ	V	Spacer	AC
610	PSLDM4449UMFW	U	Head Amp. Shield (Top)	AB
611	PSLDM4450UMFW	U	Head Amp. Shield (Bottom)	AB
612	LANGQ9054UMFW	U	Trans Earth Angle	AC
613	PSPAZ0456UMZZ	U	Spacer	AA
614	LHLDZ1909UMZZ	U	Tuner Holder	AB
615	LANGQ9055UMFW	U	Conv. Earth Angle	AC
616	LX-HZ3030GEFF	J	Screw	AA
617	PSLDM4469UMFW	U	FFC Shield	AD
618	LHLDZ1143UMZZ	U	LED Holder	AD
619	TLABM0132UMZZ	U	Model Label (VC-A462GM)	AC
619	TLABM0133UMZZ	U	Model Label (VC-A462SM)	AD
620	PSPAZ0453AJZZ	V	Spacer	AC
621	LHLDZ1746UMZZ	U	Converter Holder	AE
622	GBDYU3089UMZZ	U	Bottom Plate	AG

—— End of Mechanical Parts ——

—— End of Front Panel Parts ——

Ref. No.	Part No.	Description	Code
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SUPPLIED ACCESSORIES

ACCESSORIES

* Δ	ACC901	QACCV2001AJZZ V	ACCord	AQ
		QCNW-7544UMZZ U	75 ohm Coaxial Cable	AL
		RRMCG0009AJSA V	Infrared Remote Control	AX
			Unit	
		93GHR14172001 V	Battery Cover	AE
			Infrared R/C Unit	
ACCESSORIES (NOT REPLACEMENT ITEM)				
		TINS-2343UMZZ -	Operation Manual	—
			(VC-A462GM)	
		TINS-2368UMZZ -	Operation Manual	—
			(VC-A462SM)	

— End of Supplied Accessories —

*** Remark: VC-A462SM**

When changing main cord the whole cord with connection plug must be changed.

The cable is kept as a spare part by:

- SWEEDEN
SHARP ELECTRONICS (SVENSKA) AB
- DENMARK
RUDOLPH SCHMIDT A/S
- FINLAND
ASA KULUTUS ELEKTRONIIKA OY
- NORWAY
TRANSEL A/S

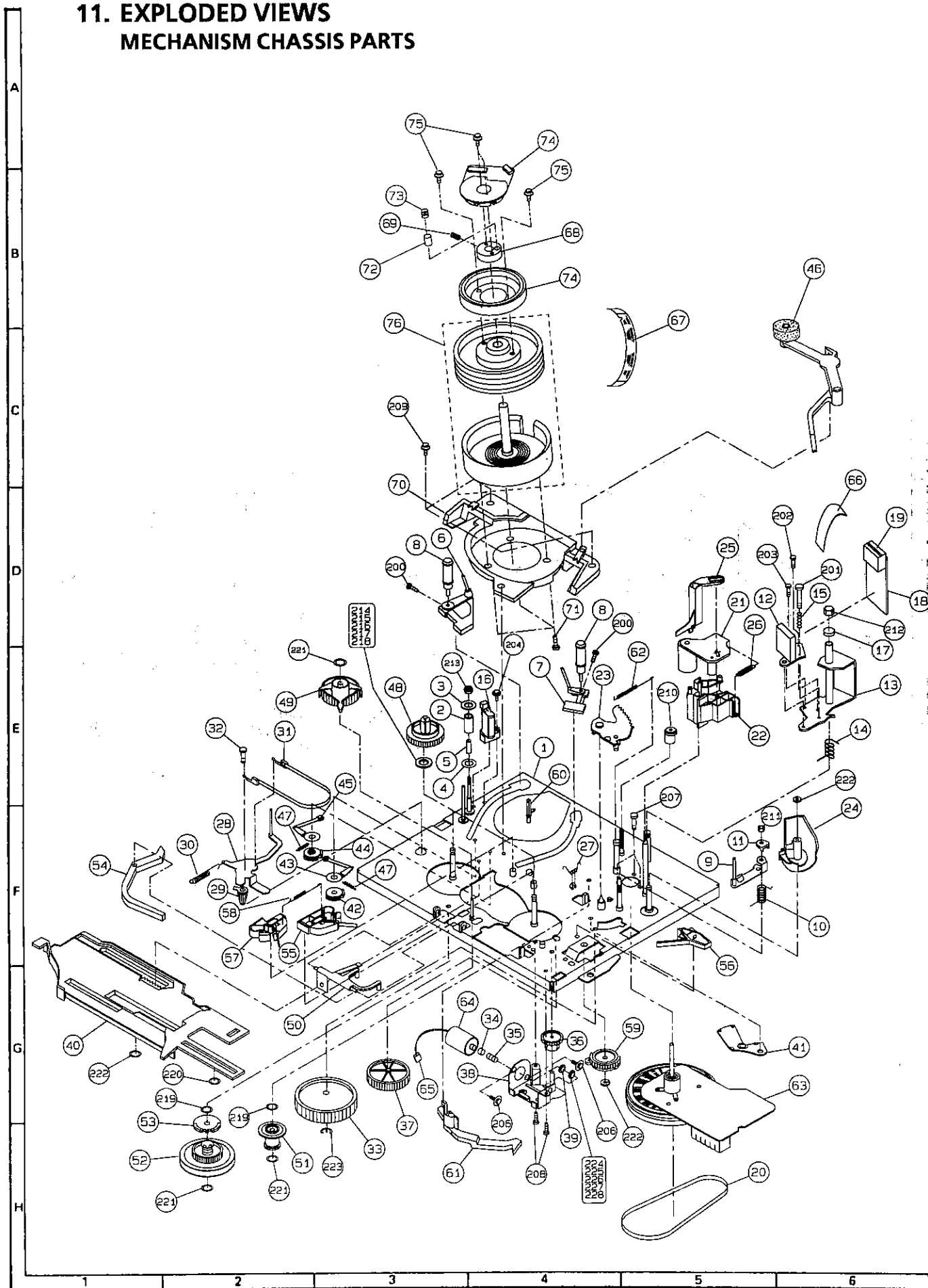
*** Bemerkung: VC-A462SM**

Bei der Auswechselung des Netzkabels muß das ganze Kabel mit Stecker ausgewechselt werden.

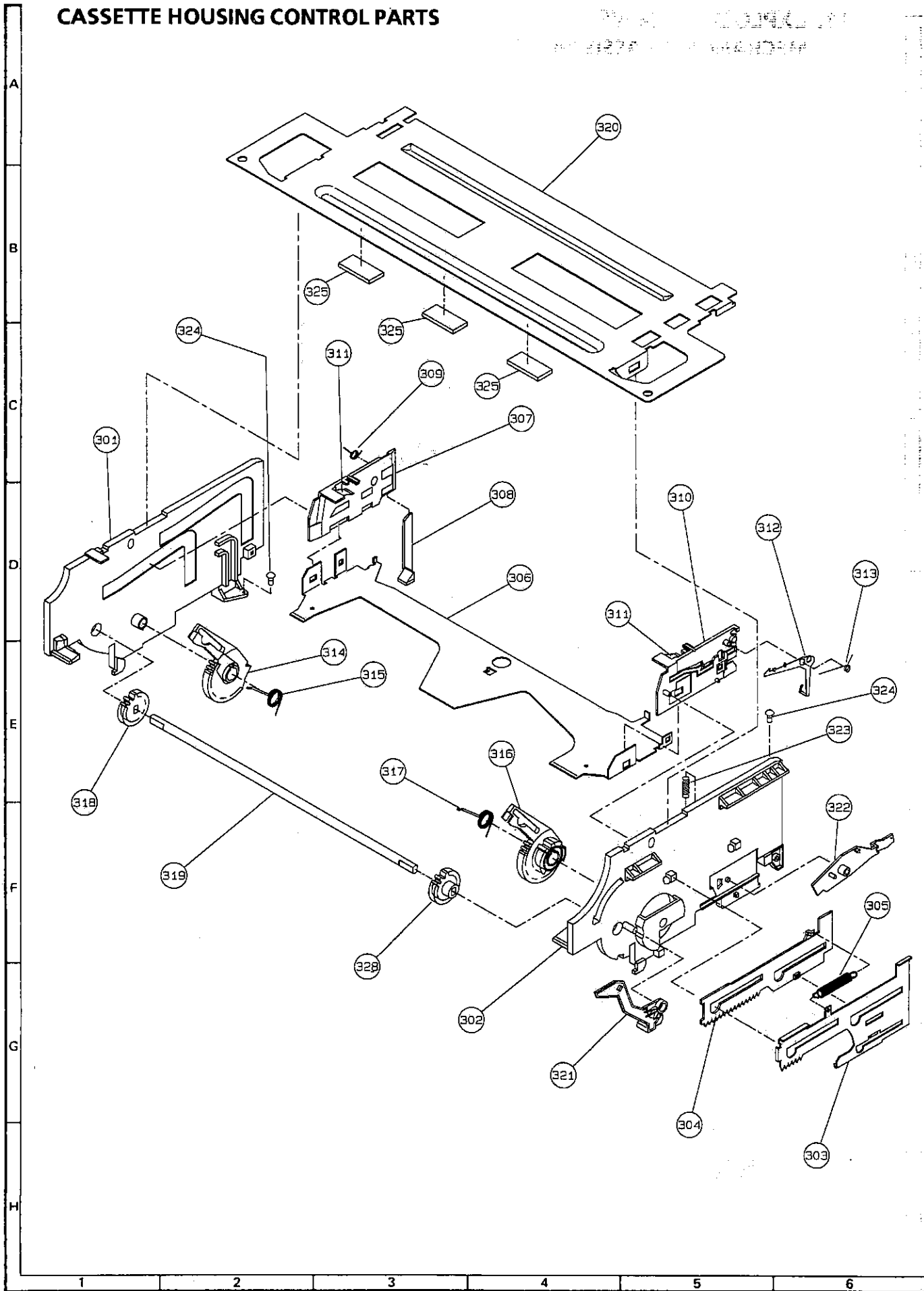
Hat das Kabel als Ersatzteil vorrätig:

- SCHWEDEN
SHARP ELECTRONICS (SVENSKA) AB
- DÄNEMARK
RUDOLPH SCHMIDT A/S
- FINNLAND
ASA KULUTUS ELEKTRONIIKA OY
- NORWEGEN
TRANSEL A/S

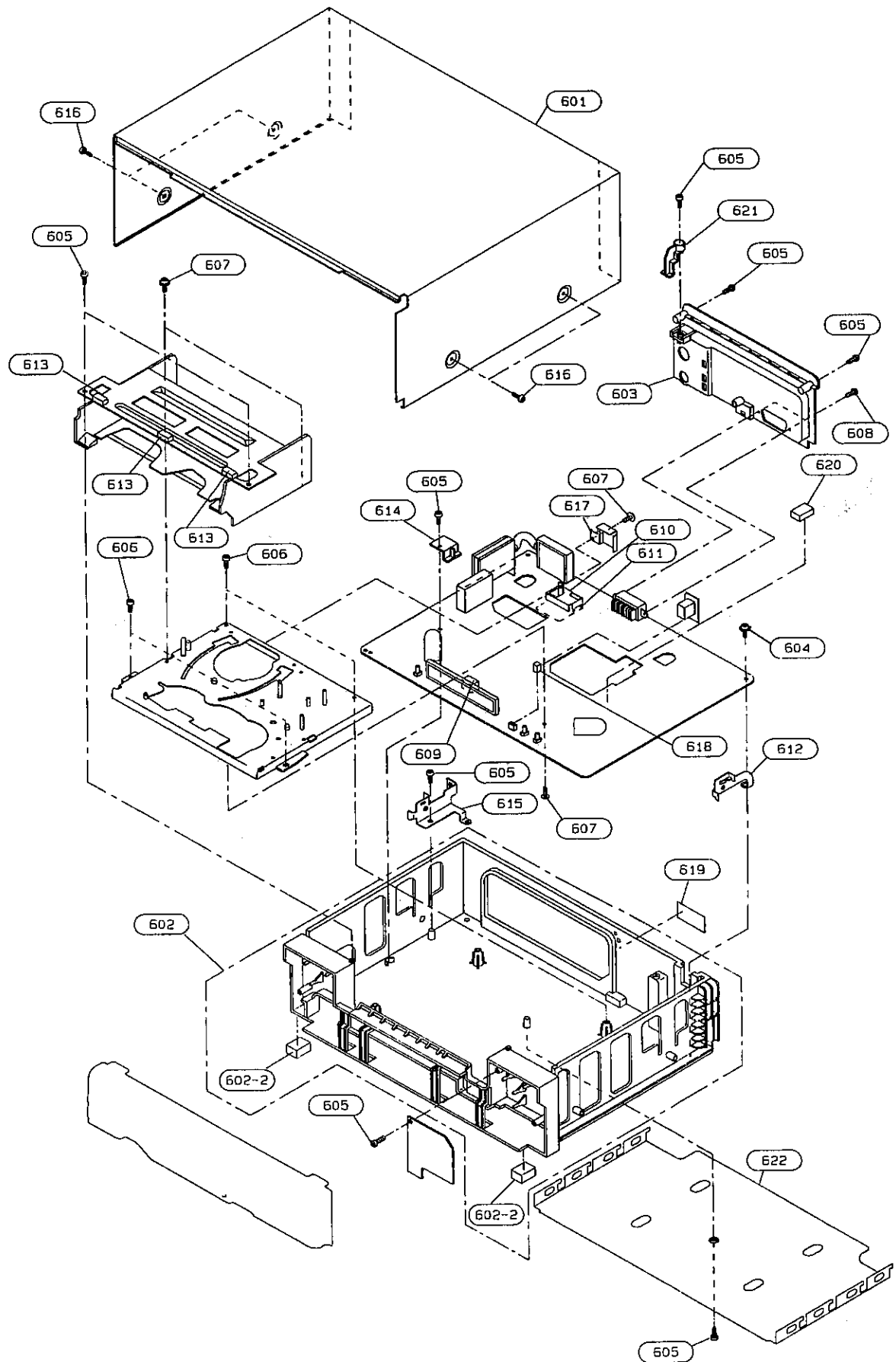
11. EXPLODED VIEWS MECHANISM CHASSIS PARTS



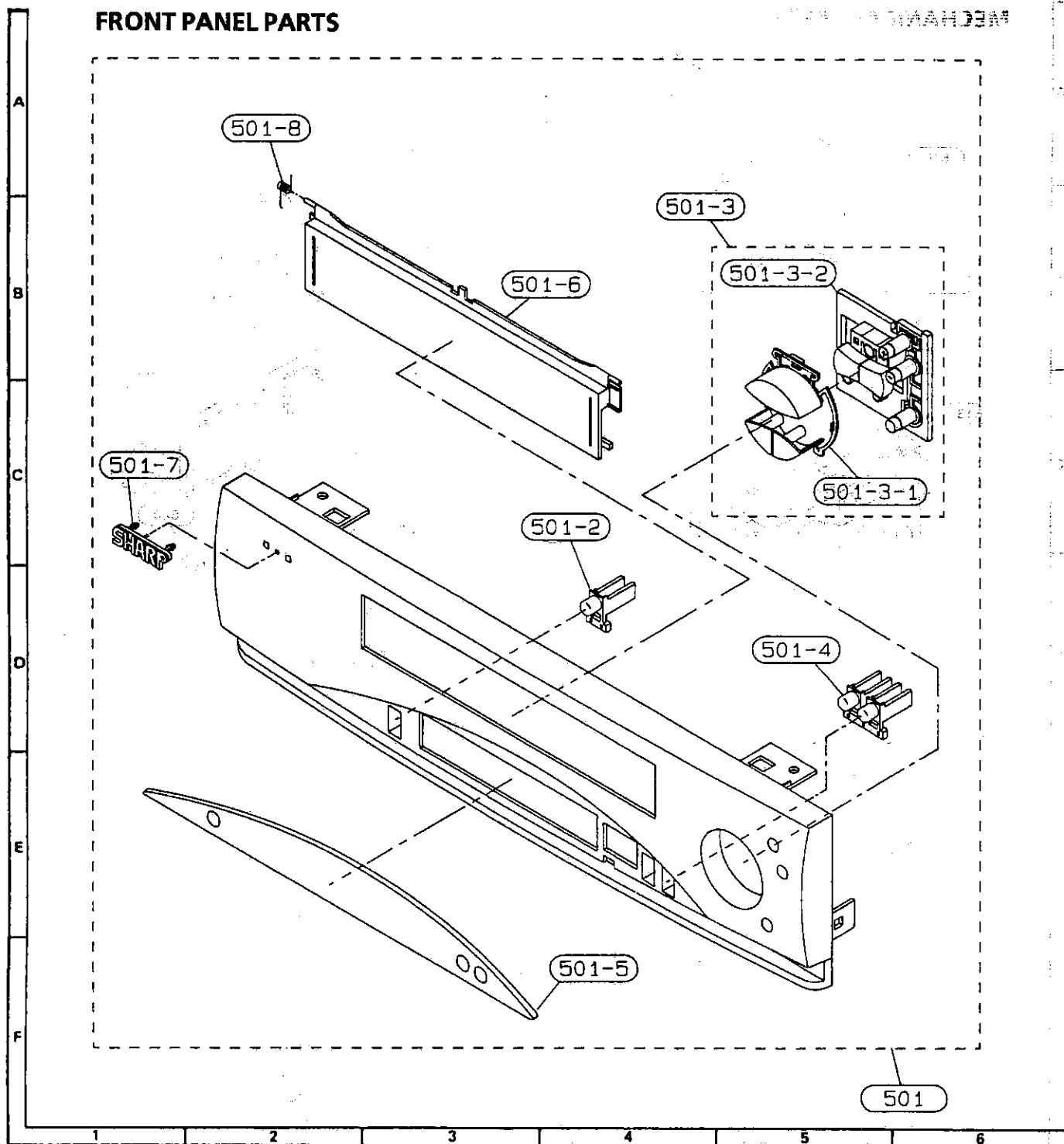
CASSETTE HOUSING CONTROL PARTS



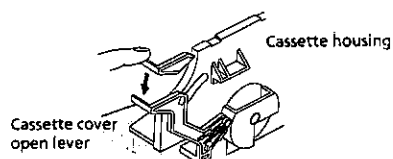
MECHANICAL PARTS



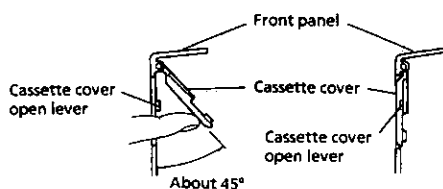
FRONT PANEL PARTS



PRECAUTIONS ON FRONT PANEL SET-UP

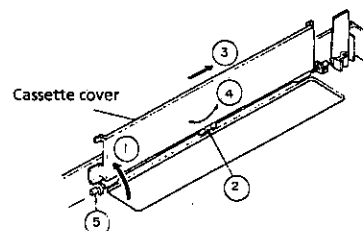


Before attaching the front panel in position, make sure that the cassette cover open lever is in its right place (lowermost). If it is out of position, push it down with a finger.



Keep the cassette cover about 45° open and make sure that the cassette cover open lever is between the front panel and the cassette cover. Now fix the front panel in place.

Do not mount the front panel with the cassette cover tilted too open. Otherwise the cassette cover might wrongly run on the cassette housing.



Removing the cassette compartment cover.
① Open the cassette compartment cover fully.
② Remove the center positioner.
③ Slide the cover to the right.
④ Slightly bend the cover.
⑤ Draw out the left-side rod.

12. PACKING OF THE SET

● Setting position of the Knobs

RF Converter Adjuster	at "E36" position	Test Signal Switch	at "OFF" position
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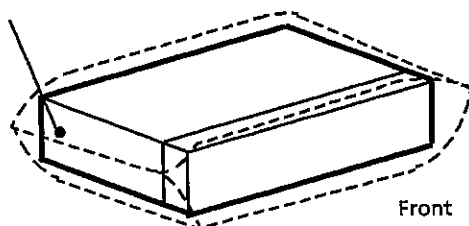
★ Accessories

- ★ TINS-2343UMZZ Operation manual (VC-A462GM)
- ★ TINS-2368UMZZ Operation manual (VC-A462SM)
- ★ QCNW-7544UMZZ 75 ohm coaxial cable
- Battery

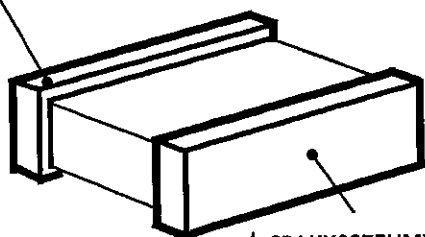
RRMCG0009AJSA
Infrared remote control unit

- ★ CPAKC 2608UMZZ (VC-A462GM)
- ★ CPAKC 2629UMZZ (VC-A462SM)

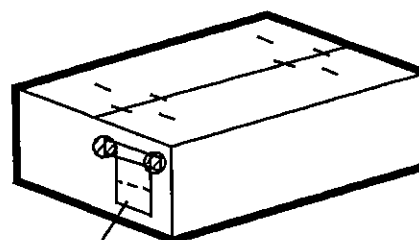
- ★ SPAKP0051UMZZ
Polystyrene sack



- ★ SPAKX0874UMZZ
Buffer material (rear)



- ★ SPAKX0875UMZZ
Buffer material (front)



- ★ TLABK0001UMZZ
No. card

★ Not Replacement Items

SHARP